INDIA RUBBER WORLD
FOUNDED 1889
CAOUTCHOUC
GUTTA-PERCHA
Reg. U.S. Pat. Off.
Reg. United Kingdom.

Published on the 1st of each month by

THE INDIA RUBBER PUBLISHING CO.
No. 25 West 45th Street, New York

Telephone—Bryant 2576

CABLE ADDRESS: IRWORLD, NEW YORK

Member of the National Publishers' Association

HENRY C. PEARSON, F.R.G.S., Editor

Vol. 66 JULY 1, 1922 No. 4

SUBSCRIPTION: $3.00 per year, $1.75 for six months, postpaid, for the United States and dependencies and Mexico. To the Dominion of Canada and all other countries, $3.50 (or equivalent funds) per year, postpaid.

ADVERTISING: Rates will be made known on application.

REMITTANCES: Should always be made by bank draft, Post Office or Express Money Order on New York, payable to THE INDIA RUBBER PUBLISHING COMPANY. Remittances for foreign subscriptions should be sent by International Postal Order, payable as above.

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Safety Work Pays Dividends

RUBBER manufacturers as a whole have been more than a little interested in safety work in their factories. This was due to a degree to humanitarian impulses but also because the rubber industry has long been counted as extra hazardous. The result of their work has meant a saving of life, a saving of health, a property saving and it will perhaps surprise many to know that a direct money saving is also involved.

Quite a number of the largest rubber companies and some of the smaller ones have been for a number of years associated with the Rubber Section of the National Safety Council. This has gone about safety work very thoroughly and in a constructive manner. A recent tabulation of results shows that insurance rates have been reduced, that accident claims have been notably brought down and an actual saving in money reached which amounts to from 20 to 25 per cent. Such a saving as this should need no comment.

Industrial relations departments, or individuals in factories, large or small, who have anything to do with such relations owe it not only to their employes, but to their business that a prompt analysis of these results as applying to their own problems should be made and that the immense amount of practical work done by the Safety Council should become a part of their own projects.

Herbert Wright on Restriction

POSSIBLY no one knows rubber planting in Ceylon, Malaya, and the Dutch Indies better than Herbert Wright, and his conclusions as to restricted production are worth pondering. He says:

"The Colonial Office Committee appointed to consider the position of the plantation rubber industry submitted an interim report in November last, as the result of which discussions have taken place and are still proceeding between the Colonial authorities in British Malaya and the Netherlands East Indies. Our view is, and always has been, that we prefer restriction on a voluntary basis, for reasons obvious to most business men. This has so far been impossible, and under such circumstances we would rather have restriction by legislation in the East than none at all. We want this view to be known, not only here but in Sumatra, as we are aware of misconceptions relative to the policies of British and Dutch owners in that island. The view I have expressed is held by all my colleagues interested in the administration of estates in the Dutch East Indies.

"The various companies operating in Sumatra and Java and domiciled in this office are restricting up to a maximum of 50 per cent normal, even without general agreement among other producers. It has always been a source of considerable surprise to me to observe the effect of our present stocks of rubber on prices. The tea market, despite its huge stocks, appears to be able to some extent to control the amount placed on the market from time to time, and probably, in consequence of this, to maintain a remunerative level. With rubber, the stocks in London are equal approximately to only three months' total supply of plantation rubber, and yet the price is kept at what is to most companies an unremunerative level. We believe that restriction, if necessary of a drastic nature, together with a restoration of confidence established in the United States, should soon reestablish the plantation industry on a paying basis."

Pima Cotton Futures

A MEASURE that may have a far-reaching influence on the development of the cotton industry in the Southwest is the bill of Congressman Henry Z. Osborne (H. R. No. 15,373) amending the Cotton Futures Act and which has been reported favorably to the House of Representatives. It will give the growers of Pima long

staple cotton the same privilege and advantages as enjoyed by the growers of short staple cotton in the Southern States in selling their cotton, when planted, or the products of the loom that weaves the cotton, for delivery in any month buyer and seller may agree upon, thus practically eliminating the risk of growing and marketing.

When the cotton futures legislation was enacted thirty-five years ago the development of American-Egyptian cotton was scarcely dreamed of, and hence such a staple as 1-9/16 inch was not included among those in which trading in future deliveries was allowed. The new bill simply aims to include the 1-9/16 staple in the list of fiber lengths specified in the law. It is claimed that it costs two and a half times as much to raise American-Egyptian cotton as short staple, that the government owes southwestern growers fair protection for the large amount of capital they have invested in handling the cotton, and that rubber manufacturers and others who use the Pima long staple are likewise entitled to protection against rise and fall in the price of such cotton, now secured only by "hedging" in Egyptian cotton on the English market.

This is the first cotton legislation, apart from the 7 per cent tariff on Pima, that has not been designed for southern planters, and only a few operators in New Orleans appear to oppose it. A strong campaign in behalf of the Osborne bill is being conducted by the southwestern planters, aided by the Pacific Cotton Exchange of Los Angeles.

The Rail Crisis and the Motor Truck

STATISTICIANS have lately produced figures about the plight of the railroads of the United States that will surely give many grave concern. It is pointed out that the nation needs enough main and side lines built as would equal trackage between New York and San Francisco, and that in the same time at least 100,000 cars and 2,500 locomotives more should be provided, not to speak of other equipment. It is also claimed that considering present economic needs we are actually short of 10,000 miles of line, 200,000 cars, and 4,000 locomotives. We are warned even by our worthy Secretary of Commerce that unless these requirements be met we may pay in one season for such neglect a penalty in losses and profiteering three times as much as the great cost of the railroads' total needs. As the railroads seem unable to help themselves, the Secretary is considering a plan whereby the superior credit of the government could be utilized in providing ample funds for the reequipment of the railroads.

But is it necessary to again put the government in virtual control of the railroads, or to pile still higher the colossal debt now borne by the rails? Is the situation as critical as the figure wizards would have us believe? Such a gloomy outlook hardly seems warranted when we consider the progress and possibilities of the rubber-tired motor truck. In one state alone, California, there are already 850 motor lines and a registry of 35,000 solid-tire trucks. The lines last year carried ten million passengers and millions of tons of freight; and the carrying industry is but in its infancy.

In most of the other forty-seven states the growth of the industry is scarcely less remarkable. No small factor in the further development of this cheap, efficient, and easily expanded service will be the measure recently passed by Congress appropriating $100,000,000 for roads. This fund will be apportioned to all states contributing dollar for dollar of federal aid, and piecemeal construction will be prevented by requiring each state to expend the money on at least 7 per cent of its highways.

Local governing bodies have blamed on the motor truck nearly all their road troubles, and have resentfully taxed trucks and restricted their operation out of all reason. Short-sighted railroad managers have openly and covertly opposed the truckmen's poaching on what they have been regarding as their preserves. Still opposition fails to stem the tide. "The dogs bark," as the Arab adage puts it, "but the caravan moves on." Truckportation is here not only to stay but to wax stronger. The railroads may long be useful as main arteries, but if they are to function at their best they must have a more highly developed collateral circulation. That desideratum will be provided by the rubber-tired motor truck.

A Rubber Flu Preventive

WHERE almost everybody is subject to an affliction year after year those who know of preventives are bound to make them known. The flu is not as dangerous as it was but it recurs every year. Preventive or curative drugs do not seem to exist. Wet feet, and oftentimes cold feet cause the primary attack and frequently bring about the dangerous relapse. The ordinary leather sole is a sponge which absorbs water from clayey soils, wet pavements, damp pavements and dewy lawns. The cold from cement floors readily strikes through it. The result is cold, influenza and sickness incalculable.

The practical and perfectly obtainable preventive remedy is the rubber sole. It should be a part of every physician's prescription. The coughers and spitters in congested centers should be fined if they do not wear them. Educators should teach the young that almost as many fatal diseases come through the feet as through the mouth and nasal passages. Rubber shoes and rubber-soled leather shoes are the simplest and most practical conservers of health that civilization offers.

THE EUROPEAN WORD PROLETARIAT HAS BEEN PRETTY generally adopted as meaning the laboring masses as a whole. And now comes another referring to skilled workers, technical foremen, superintendents, etc. The word is CAPACITARIAT. Thus the rubber trade has a sizable proletariat and an exceedingly large and highly trained capacitariat.

Rubber Manufactures More Than a Billion

United States Census of 1919

ACCORDING to the final figures of the 1919 census, the rubber industry of the United States has shown a remarkable growth. In 1919 the value of all rubber products was $1,138,216,019, an increase of 278.2 per cent over 1914 when the figures were $300,993,796.

The exceptionally large increases, however, from 1914 to 1919, in salaries and wages, cost of materials, and value of products, are due largely to a general rise of prices and wages following the World War, and do not, therefore, fairly measure the growth of the industry for that period. A truer index of the growth of the industry is found in the increase of the average number of wage earners, and the primary horsepower. The addition of the Federal income tax since 1914 will account for the increase in "Rent and taxes." "Contract work" or work performed by employes other than those in the plants reporting, has little significance, since it represents merely the methods of manufacture used

Table I. Comparative Summary for the Industry: 1919, 1914

	Number or Amount		Per Cent of Increase
	1919	1914	1914-1919
Rubber Goods—All Branches			
Number of establishments	477	342	39.5
Persons engaged in the industry	206,202	88,821	132.2
Proprietors and firm members	98	87	.....
Salaried employes	47,555	14,712	223.2
Wage earners (average number)	158,549	74,022	114.2
Primary horsepower	429,887	199,543	115.4
Capital	$960,070,726	$267,671,422	258.7
Salaries and wages	278,991,545	60,445,980	361.6
Salaries	85,228,456	16,278,578	423.6
Wages	193,763,089	44,167,402	338.7
Paid for contract work	3,676,318	408,851	799.8
Rent and taxes (including internal revenue)	44,445,822	2,226,322	1,896.4
Cost of materials	594,343,590	163,034,713	264.6
Value of products	1,138,216,019	300,993,796	278.2
Value added by manufacture[1]	543,872,429	137,959,083	294.2
Rubber Tires, Tubes, and Other Rubber Goods			
Number of establishments	437	301	45.2
Persons engaged in the industry	160,842	62,257	158.3
Proprietors and firm members	97	85	.....
Salaried employes	40,879	11,952	242.0
Wage earners (average number)	119,848	50,220	138.6
Primary horsepower	354,188	151,927	133.1
Capital	$782,637,722	$199,183,036	292.9
Salaries and wages	231,756,285	43,905,632	427.9
Salaries	74,949,457	12,626,877	493.6
Wages	156,806,828	31,278,755	401.3
Paid for contract work	3,579,851	368,511	871.4
Rent and taxes (including internal revenue)	40,201,301	1,715,686	2,243.2
Cost of materials	525,686,309	126,111,673	316.8
Value of products	987,088,045	223,610,784	341.4
Value added by manufacture[1]	461,401,736	97,499,111	373.2
Boots and Shoes, Rubber			
Number of establishments	25	23	.....
Persons engaged in the industry	37,929	20,359	86.3
Proprietors and firm members	1	2	.....
Salaried employes	5,053	1,670	202.6
Wage earners (average number)	32,875	18,687	75.9
Primary horsepower	49,400	24,621	100.6
Capital	$131,513,436	$46,051,464	185.6
Salaries and wages	38,284,110	11,944,733	220.5
Salaries	7,401,388	1,958,279	278.0
Wages	30,882,722	9,986,454	209.2
Paid for contract work	96,467	39,140	146.5
Rent and taxes (including internal revenue)	3,080,065	345,678	791.0
Cost of materials	50,346,880	23,956,036	110.2
Value of products	116,917,434	53,822,123	117.2
Value added by manufacture[1]	66,570,554	29,866,087	122.9
Belting and Hose, Rubber			
Number of establishments	15	18	.....
Persons engaged in the industry	7,449	6,205	20.0
Proprietors and firm members	.....	.....	.....
Salaried employes	1,623	1,090	48.8
Wage earners (average number)	5,826	5,115	13.9
Primary horsepower	26,299	22,995	14.4
Capital	$45,919,568	$22,436,922	104.7
Salaries and wages	8,951,150	4,595,615	94.8
Salaries	2,877,611	1,693,422	69.9
Wages	6,073,539	2,902,193	109.3
Paid for contract work	.....	1,200	.....
Rent and taxes (including internal revenue)	1,164,456	164,958	605.9
Cost of materials	18,310,401	12,967,004	41.2
Value of products	34,210,540	23,560,889	45.2
Value added by manufacture[1]	15,900,139	10,593,885	50.1

[1]Value added by manufacture equals value of products minus the cost of materials.

Table II. Detailed Statistics on Quantity and Value, All Branches

Product	1919 Number and Amount	1914 Number and Amount
Total value	[1]$1,138,216,019	[1]$300,993,796
Tires:		
Pneumatic—		
Automobile—		
Casings—		
Number	32,835,509	8,021,371
Value	$603,896,200	$105,678,951
Inner tubes—		
Number	33,255,410	7,907,351
Value	$81,312,576	$20,101,084
Motorcycle and bicycle—		
Casings—		
Number	4,656,121	3,728,138
Value	$13,449,225	$6,905,853
Inner tubes—		
Number	1,125,097	[3]
Value	$1,347,012	[3]
Solid—		
Truck—		
Number	1,454,807	[2]
Value	$43,917,152	$13,735,681
All other—		
Number	6,873,650	[2]
Value	$9,004,543	[4]
Boots, rubber:		
Pairs	9,207,703	4,024,486
Value	$26,066,647	$12,647,934
Shoes, rubber:		
Pairs	66,145,541	57,211,728
Value	$64,713,182	$37,858,222
Shoes, canvas, with rubber soles:		
Pairs	21,034,664	[2]
Value	$25,176,684	[2]
Heels, sold as such and on hand:		
Pairs	138,468,769	[2]
Value	$16,103,501	[2]
Soles, including composition or fiber:		
Pairs	9,777,085	[2]
Value	$2,455,306	[2]
Rubberized fabrics, sold as such on hand:		
Automobile and carriage—		
Yards	40,750,500	[2]
Value	$10,696,547	[2]
All other—		
Yards	47,162,085	[2]
Value	$13,712,376	[2]
Belting, value	$22,436,242	$7,989,405
Hose, value	$26,998,292	$16,853,693
Packing, value	$7,316,819	$3,507,651
Clothing, value	$8,824,430	$6,799,515
Druggists' and stationers' supplies, value	$15,801,892	$7,511,755
Hard rubber goods, value	$34,383,231	[2]
All other manufactures of rubber, value	$80,719,898	$41,384,086
Reclaimed rubber, sold and on hand:		
Pounds	125,758,882	.....
Value	$20,173,040	$11,134,958
All other products, value	$9,711,224	$8,885,008

[1]In addition, products to the value of $9,134,403 in 1919, and $752,503 in 1914, were reported by establishments assigned to other classifications.
[2]Figures not available.
[3]Included in motorcycle and bicycle casings.
[4]Included in tires, solid, truck.

by manufacturing establishments, which vary from year to year.

Tires are the chief product of the rubber industry, the output of these being valued in 1919 at $752,926,708 or 66.2 per cent of the total value of products for the industry as compared with $146,421,569 or 48.6 per cent in 1914.

The second most important branch of the industry, rubber boots and shoes, had an output in 1919 of $90,779,829 or 8.0 per cent of the total value of products for the industry as compared with $50,506,156 or 16.8 per cent in 1914. The value of belting and hose produced in 1919 totaled $49,434,534 or 4.3 per cent of the total value of products as compared with a value of $24,843,098 or 8.2 per cent in 1914.

Mold in Plantation Rubber

Singapore Smoked Sheet 1920 Crop

ONE of the most comprehensive explanations regarding the exceptional prevalence of mold on 1920 shipments of Singapore smoked sheet is that given by John S. Kemp, of New York, who, as special agent for insurance companies has made an exhaustive study of the matter in the Far East and elsewhere. Primarily Mr. Kemp reports that all data available indicate that, apart from gradual loss of weight, the rubber suffered no physical injury from the fungous growth, nor did he find any increase in steamer damage, despite the fact that lighterage conditions at Singapore leave much to be desired, considerable native craft being very unseaworthy and supervision but slight, resulting in a too high percentage of damage per ton. Still nothing indicates any real increase in lighter damage in 1920 so far as New York consignments are concerned.

Breakage of cases in deliveries from estates to godown at Singapore is considerable, thus facilitating the entry of mold spores. At godown about 10 per cent of the cased rubber is opened for sampling, while bulk rubber is examined also very freely by buyers, who compare the goods with the official Singapore standard for smoked sheet: "Clean, tough rubber, free from mold, dampness, under or overcured sheets, and not massed; slight traces of air bubbles may be allowed, but at the discretion of the Committee (Standard Qualities Committee of the Singapore Chamber of Commerce Rubber Committee)." This standard was lowered somewhat, to meet protests, in the third quarter of 1920.

The Committee passes upon a good proportion of the prime grades of Malaya rubber, and it is curious to note that while standard awards were made in 1920 for 31,074,873 pounds of smoked sheet, 10,248,948 pounds were rejected, that is, 24.81 per cent, causes being given in but few instances. While the whole amount thus dealt with was about 18,450 tons, the year's shipment was about 150,000 tons. In January, 1921, rejections reached 24.72 per cent, of which 251,925 pounds were rejected for "non-moisture" and 531,359 pounds for "moisture" defects, or about 17 per cent of the entire quantity examined.

The "non-moisture" refusals included: oversmoked, specky, barky, dirty, rusty, sticky, tacky, bubbly, resinous, short, and "off" rubber. The "moisture" defects comprised: moldy, damp, undercured, wet, moldy, edge, going moldy, slightly damp, and edge-damp rubber.

Numerous Awards for "Moisture"

It is also shown that of the 955 arbitrations made during the thirteen months ended January 31, 1921, by the official Panel of Arbitrators, 400 awards were made for damages by "moisture" to 3,570,100 pounds of smoked sheet. The most frequent awards were those for uncured spots, internal dampness, and latex-undercuring. Damage to packages by rain or sea water in transit from estates to godown were no greater in 1920 than in 1919. To offset the unfavorable effect of dampness in the warm warehouse on the waterfront, better ventilation and more open tiering of cases are urged. To protracted storage, a peculiar 1920 condition due largely to unusual speculative dealings that detained much of the stock in godown, with frequent opening up of the rubber, is attributed a large part of the increase of moldy outturn at United States ports.

While some chemists familiar with estates' conditions contend that undersmoking accounts for more mold than undercuring, because many estates were probably too eager to meet the demand for light-colored sheets. Mr. Kemp says that the consensus of opinion is that undercured or internally damp sheets accounted for a great deal of the moldy stock. Faults most often noticed in estate deliveries were insufficient drying and smoking, use of unstandardized latex and of chemicals that might favor mold growth, while contributory causes were a lowered morale and a reduction in estate forces. Much improperly prepared rubber was undoubtedly hurried out for sale in the first quarter of 1920, owing to unusually favorable market conditions.

The lack of a laboratory research standard, instead of the present inadequate visual test, for judging the smoked sheet is deplored, and it is urged that sheet should be judged rather for its inherent (manufacturing) virtues than for its appearance.

What Becomes of Moldy Sheet

Most of the moldy sheet is utilized. Often it is remilled and shipped as lower grade crêpe; or, where a buyer must take it, its surface is just brushed (a temporary expedient) or it may be resmoked so well that it even passes detection by experts. There is considerable rehandling and resmoking in Singapore.

The use of containers of burlap and ordinary native lumber is deprecated, while veneered cases and nomis are approved. It is urged that the well dried, well smoked, unfolded sheets should be packed at the factory directly after removal from the drying racks, near the smoke-house, in the dryest time of the day, into cases that have been well dried and smoked, with sheets as liners, and that through shipments should be made and package opening avoided if possible.

As to symptoms and cure, the report says that there is no real cure for mold, and if fungicides are used the "cure" is often worse than the disease. But increase of mold can be prevented. The danger signals and "symptoms" are "internal moisture," "undercuring," and opacity, or the "white streak," best revealed by cutting.

As to the outlook, the report adds, while a condition of excess mold at destination might continue for the remainder of 1921, a gradual improvement thereafter could be expected. This would be due to the efforts of large, forward-looking interests, to the endeavors of estates (now working on reduced output) to recoup by means of a better product losses sustained by rejections as well as through the large allowances they had to make for moldy sheet; and shippers of hitherto faulty rubber will find it to their advantage to resmoke to escape penalties. Improvement should be effected by the livelier movement of rubber, the period of prolonged storage being quite ended.

The mold question is likely to arise less on shipments of Singapore standard sheet than on shipments sold on London contract; yet it is claimed that unless the Standard Qualities Committee changes its attitude regarding uncured sheet, moldy outturns may continue much longer, even though the rubber be shipped in apparently good condition.

Incidentally discussing the proposition to give certificates of shipping condition, the report refers to the doubtful value of them, and as superfluous in dealing with shippers of known integrity.

What Is Wanted in Rubber Soles

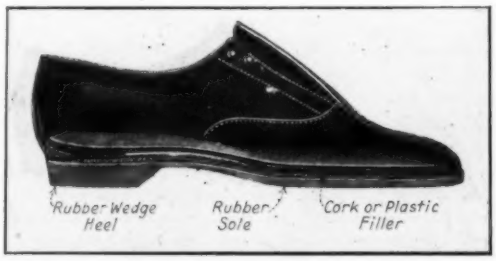
An Analysis of Existing Conditions

By Chester C. Burnham

UNEXPECTEDLY and out of a clear sky as it were, an unusual demand for rubber soles has come among us. In company with short skirts, wool hose, knickers for women and men, and the greatly increased interest in all sports since the war, there has materialized a very sizable demand for suitable sporting footwear. Expert shoe men state that the demand will have to be definitely reckoned with but they also add that rubber sole manufacturers must protect their own interests by compounding soles properly and by designing types of soles that will serve the purposes best and wisely. Last fall the sport sole demand came at a time when the rubber sole industry was suffering somewhat from a dwindling demand for the regulation type of soles. While there was plenty of equipment for quantity production of regular types, that for sport soles was very limited indeed and worse than this, the moldmakers were crowded with heel mold orders and thus had no time to make sole molds. Soon every piece of available equipment was pressed into service and more than one manufacturer tried to duplicate his inadequate equipment by making castings of them. Some of the best of this equipment was of faulty design and the manufacturer was forced to assume the extra burden of amplifying this equipment because he had already introduced it and must have greater production even if the design was faulty.

Desired Types of Soles

Naturally relief came at last and new manufacturers entered the field with new equipment, whereupon arose a decided division of opinion as to whether the knob type of sole was more desirable than the suction cup, or whether either of these was to be preferred over the so-called washboard type. In the early days of the demand this matter of type did not disturb the conditions very much but with the approach of new styles and greater production, the trade became greatly interested in the matter of design and



Welt-Shoe Construction with Cork or Plastic Filler

still is interested to a considerable degree. Experienced shoe buyers quickly divided the demand into two classes:

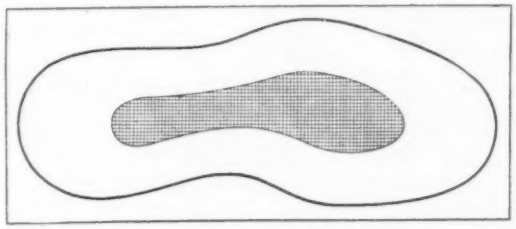
1. Those who used such footwear for sports.
2. Those who wore such footwear because it was modish and comfortable.

Department store and shoe store managers soon found that a very large percentage of sales on this class of footwear was to those who had no interest in sports but merely wore this type of shoe because it went well with the short skirts, sport clothing and bobbed hair styles of the day. Gradually, however, it began to dawn upon these dealers that even in this broad usage there was a definite preference for certain types and in seeking for a reason it was discovered that certain types of soles were decidedly uncomfortable when worn for office or every day wear.

To properly understand why this might be so, one must study shoe manufacturing practice for a few minutes. In making a welt shoe, there is a space between the inner and the outer sole that has to be filled with some sort of plastic substance in order to make a firm bottom. With plain soles this was comparatively unimportant but when sport soles came along with knobs, wrinkles and hollows in them, it was found that constant walking would drive these buttons or rings into the plastic filler, causing the insole of the shoe to take on definite creases or bunches corresponding somewhat vaguely with the design of the sole. Thus the wearer would be walking on a series of bunches which became in time decidedly uncomfortable.

Fabric Inlay for Sport Soles

Because of the enormous demand for soles, no particular attention was paid to this matter at first, but with a shortened demand as the buying season waned, far-sighted rubber men conceived the idea of backing such soles with an inlay of frictioned fabric. This idea was not new but was borrowed from the former practice of so backing rubber soles in an attempt to eliminate stretch and puffing of the sole in wear. The idea of inlaying fabric in this manner is unquestionably a splendid one and some manufacturers make an additional charge for it. However, the fabric inlay should be adopted as standard practice by all sole manufacturers. It makes a firmer shoe bottom, gives the sole increased wearing life, facilitates cementing of the soles in the shoemaking process, and immeasurably adds to the value of the product.



Fabric Inlay Molded on Back of Sport Soles

Price Comparisons

One of the strange things about shoe styles is that no one can tell just where they come from or whence they go. To build up a permanent demand for sport-soled footwear, manufacturers should pay special attention to the requirements of the wearer, carefully consider the matter of design, and develop perfect compounds for the purpose.

Consider for a moment the interesting prices that have been obtained for soles and heels of this sport type. As high as 70 cents per pair set—one pair of soles and one pair of sport heels to match—has been paid for men's soles and heels while one firm has been selling women's sport sole and heel combination at 40 cents per set. Compare that with the prices which plain soles and plain heels have brought or are bringing, which is around 30 cents per set, and it will be seen that the field is an interesting one from a

standpoint of profits. Some examples of how these prices are divided may be seen from current trade quotations.

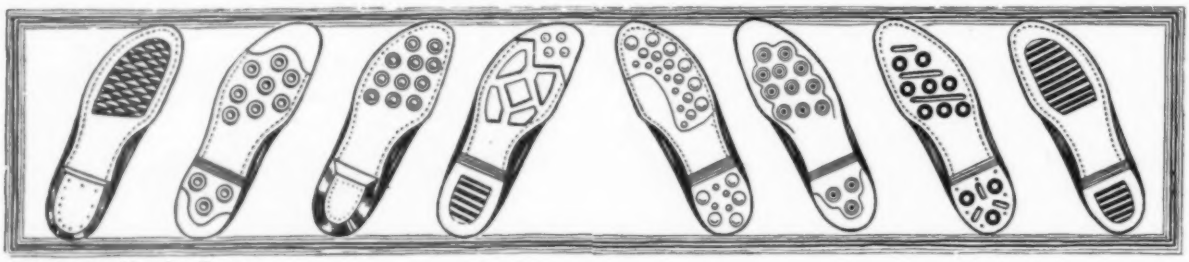
STYLE	COLOR	THICKNESS	SOLE PRICE Cents	HEEL PRICE Cents
Men's,	black, brown, pink	12 iron	48	14
Men's,	white	12 iron	53	16
Women's,	black, tan, pink	10½ iron	32	12
Women's,	white	10 iron	37	14

These prices do not represent any particular type of sole but are indicative of the price tendency and range. Doubtless, with the demand better stabilized and with competition, prices might drop to lower levels than those and in fact, some price concessions are now being made where solemakers have large stocks on hand or where other factory conditions make a drive on this product desirable at this time.

Golf Associations Favor Rubber Soles

In the matter of design, the predominance of any one type over another is a fair indication of public sentiment, and the end of this summer will surely tell which type of sole has been the best all-around seller. Before that time, however, we can give attention to the matter of soles designed for wear on shoes built for sport. Golf associations all over the country are barring out the hob studded golf shoe and the fiber sport soled type will undoubtedly take its place. The question then arises, what type of sole is best adapted for golf, for tennis, for gymnasium, etc.?

A glance at the accompanying illustrations of styles will give some idea of what has been done in the way of sole face plate design. For purposes of comparison the knob sole types, the cup sole types and the washboard types are shown.



Boot & Shoe Recorder, Boston

Typical Sport Sole Designs—Knob Types—Vacuum Cup and Washboard Types

Discussion of Sole Design

Golfers will probably show a preference for the knob design if for no other reason than that the knobs simulate most closely the idea of hobs. Tennis players will probably prefer the suction cup or washboard type, while for gymnasium work the suction cup type is undoubtedly to be preferred on account of its greater holding power on the smooth gymnasium floors. For ordinary sport wear, the wearer having no intention to participate in sports, the sole that will permit of dancing, bowling and hiking, will find greatest favor. It is apparent that a design having too many indentations in the sole will leave little of the sole itself for a backbone, so that the wearing qualities may become impaired, and such a sole will necessarily be uncomfortable to walk on unless backed with a fabric inlay. Likewise, hobs or buttons that are too pronounced will only cause inconvenience and at the same time will not greatly increase the wear over a moderately raised design.

Specific Gravity of Compounds

Aside from matters of design there are other pertinent factors in the success of the sport sole. A sole of light gravity is preferable to a heavy one, and a comparison of those now on the market will show that many are too heavy to be of practical use. White soles must necessarily be heavier than black, brown or pink soles but little effort has been made to reduce this gravity to a reasonable figure. For example, it should be possible to obtain excellent compounds in black and tan at gravities of 1.3 or less and in a grayish white—oftentimes acceptable as a white sole—at around 1.5 sp. gr. or slightly less. In actual practice black and brown compounds will frequently run as high as 1.75 sp. gr. and whites well over 2 sp. gr. The pink compounds are usually lightest of all and no doubt there is good reason for it but it would seem as though such a wide discrepancy in range of gravities is as unnecessary as it is undesirable. The point should be to arrive at a weight of leather if possible, and this is about 1.28 sp. gr. In making this comparison it should be borne in mind that rubber or fiber soles must be thicker than a leather sole would be for the same shoe and therefore compounds should be lighter than 1.28 sp. gr. if possible. That the shoe manufacturer is constantly comparing rubber and fiber soles and heels with those of leather must be recognized. He is never quite reconciled to using rubber soles in place of leather and thus everything that makes rubber soles objectionable when compared to leather should be removed if possible, in order to overcome this point of sales resistance. Speaking in shoemakers' terms, soles are judged by their thickness in "irons," an iron being 1/48-inch. A sport shoe for a woman might carry a 7 or 8-iron leather sole which would mean that it was 7/48 or 1/6-inch thick, but the same shoe with a rubber or fiber sole would rarely carry less than a 10 or 11-iron sole so that it would be at least 1/6-inch thicker and consequently would weigh approximately 25 per cent heavier than the leather sole even if the two soles were of the same gravity. These are rough figures of course and only serve to outline the thought more in detail. It would be desirable then, to obtain gravities below 1.28 whenever practical.

Contour and Profile

The contour of a sole has considerable to do with its desirability and as a guide to those who have neither the time nor inclination to look into this matter, very satisfactory contours for sport sole use are here shown—the women's sole size 4 and a men's sole size 8 being fair average sizes in commonest use.

The profile of a sole is a most important matter and aside from the depth of the face plate design there is also the thickness of the shank to consider. Many soles are not sufficiently thick in the shank to withstand the extreme tension sometimes forced upon the sole. Consider the strain on a sole when the golfer is at the height of his stroke, for example, or the strain on a tennis player's sole when he is kept constantly on his toes in a strenuous match. Here it is that the shank must stand up and give real service when required. The manufacturer who attempts to gain light weight and low cost by skinning the sole at this point is working a hardship on the industry. Let them be full ironed at this point and rugged in construction.

Quite a few fiber soles were used by the army and navy during the war. The first soles submitted were immediately condemned in contour and profile because they were not suited to the army lasts and more particularly because it was not thought that they could ever withstand the rough army usage. It is well to emphasize the value of the fabric inlay that runs well back into the shank of the sole. The forepart inlay would be valuable but the longer inlay is by far the best.

Forepart Design

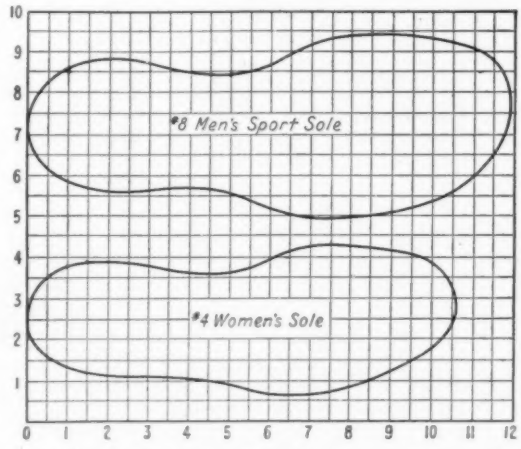
Shoe manufacturers have been somewhat troubled this season because the design of the foreparts has sometimes interfered with the stitching process in making the shoe. There is no particular benefit in having the surface design spread over the entire sole area and there is considerable inconvenience in so doing. According to the shape of the last, the shoe manufacturer must round his sole before he stitches it firmly to the bottom of the shoe and if in this operation he cuts into the design, it means that the stitcher will stitch into it also when he comes to do this work. Such a job is unsightly and carries with it besides the dangerous probability of cutting through the sole when the sewing needle or curved awl changes suddenly from the thicker to the thinner portions.

A Compounding Question

Many shoe manufacturers are bothered at times because an excessive use of paraffine or other materials in compounding makes it almost impossible for cement to adhere to the soles. It should be borne in mind that the shoe manufacturer is forced to cement his soles into position before stitching and if he cannot obtain a fairly good bond in this manner the soles are sure to puff in wear and develop other troubles which will seriously affect their service to the wearer and reflect discredit on the shoe manufacturer and the sole maker. While it is often possible to correct this matter by using special cements of some sort, these are not always easy for the shoe manufacturer to obtain, even though he has an inclination to increase needlessly his already large list of materials to be carried on hand.

Molded Toe Pieces

Ten years ago, or more, when fiberized compounds were first gaining popularity, considerable progress was made in molding fiber toe pieces into fiber soles. Sometimes these pieces were of differently compounded material and sometimes they were of the same material first molded to shape and given a short cure before being added to the entire sole. In this way the toe piece was cured harder than the sole and it gave stubborn resistance to wear at vulnerable points. The problem of getting a bond between the tip and the sole was one of utmost importance and aside from a factor of labor cost presents the only difficulty in commercializing this



Contour of Soles for Men and Women Compared

idea. Some solemakers used the cold cure process and used leather tips instead of fiber.

Sport Heels

Regarding sport heels it is easily understood that the design of the heel merely follows that of the sole for the sake of harmony. It is obvious that whatever good qualities are found in the design of the sole can with profit be duplicated in the heel design. Nearly all sport shoes carry what is known as an outside wedge heel and it is important that the bevel or wedge be sufficiently long to cement properly. Some shoe manufacturers have succeeded in attaching such heels without the use of nails and washers, but the vast majority prefer to cement and nail them in the customary manner.

There is a definite need for the rubber sole in the shoe industry but much study is needed by the rubber manufacturer to develop his product so that it shall be acceptable to the shoe manufacturing trade. Not all fiber sole departments are running at full capacity and the fault is not in the quality of the sole nor in the desirability of the sole. Rother it is the manner of preparation and presentation which brings results these days.

Overloading and Underinflating Tires[1]

A tire is cured approximately to the shape it will assume when fully inflated. This is a highly important feature as it minimizes the strains within the tire structure. When inflated and supporting a load a tire assumes a shape like that pictured in Fig. 1, with a short bending of the plies as shown at *E*.

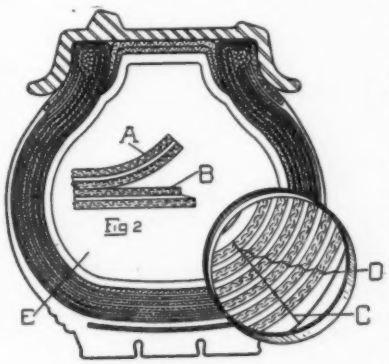


Fig 2

Fig 1

The Effect of Tire Abuse

The magnified section illustrates what happens when the tire section is abnormally distorted. The straight line drawn across the section at *C* moves to position *D*. This movement is greater for the outer than for the inner plies, and to compensate for this movement, the intermediate thin layers of rubber should have sufficient quality to withstand the strains involved. When a tire is operated underinflated or overloaded and the fabric movement becomes excessive, the layer of rubber soon ruptures and ply separation begins.

The unequal stretch between fabric and rubber is shown in Fig. 2, representing two plies of fabric separated by a layer of rubber as at *A*, as they would appear in a tire not loaded. When supporting a load there is flattening at the point in direct contact with the road, as indicated at *B* where the two plies of fabric have been flattened out. There is a noticeable difference in their length which must be compensated for by the stretching of the thin layer of rubber separating them.

This is precisely what happens between each ply of fabric in the tire when it is subjected to a load. If the load is not in proportion to the inflation pressure the rubber layer soon breaks away from its fastening, allowing a frictional movement that soon weakens the casing to such an extent it can no longer withstand the inflation pressure and bursting is inevitable.

[1] Abstract of paper by R. L. Davis, United States Tire Co.

ACCORDING TO *Commerce Reports* THE AMOUNT OF RUBBER GOODS imported into Santo Domingo in 1921 totaled $211,757, of which not less than $186,050, or 88 per cent, was supplied by the United States. The small remainder came from England, France, and other overseas sources.

Tire Production in the United States

STATISTICS published by the United States Department of Commerce and the National Automobile Chamber of Commerce, together with those gathered and prepared by THE INDIA RUBBER WORLD, show the development of the American rubber tire industry in recent years.

That its phenomenal growth is due chiefly to the enormous and steadily increasing use of the automobile for both business and pleasure is indicated by the rapidly advancing motor vehicle registration for recent years and the fact that less than 2 per cent of the tire product is being exported. The United States consumes practically all the tires it makes.

American Motor Vehicle Registration

The total 1919 registration of 7,558,666 cars represented a gain of 23 per cent over 1918; that of 9,211,295 cars in 1920, a gain of 22 per cent over 1919; that of 10,448,632 cars in 1921, a gain of 13 per cent over 1920. Five states—New York, Ohio, Pennsylvania, Illinois and California, named in their relative order—have almost one-third of the total registration of the whole country. Their 3,516,166 motor vehicles are nearly 70 per cent more than the combined registration of the entire world exclusive of the United States, which totals 2,079,640 cars.

Automobile Registration

Year	1914	1915	1916..	1917	1918	1919	1920	1921
Cars	1,711,339	2,445,664	3,512,996	4,983,340	6,146,617	7,558,666	9,211,295	10,448,632

Of the entire world registration of passenger cars and trucks, numbering 12,528,272, 83 per cent are in the United States. In other words, there are over six times as many cars in operation in the United States as in all the rest of the world. It is interesting also to note that in 1914 the United States had more motor vehicles than all the rest of the world now has.

Assuming five tires per car as the average annual consumption in 1913 and three and one-half tires per car the present consumption, owing to the wider use and longer life of cord tires, the American demand for tires has grown from about 6,275,000 in 1913, to about 36,570,212 in 1921, or more than 5½ times that of 1913. On the same basis, the 1921 tire demand for the rest of the world was only 7,278,740 tires.

American Tire and Tube Production

During the past seven years the American tire and tube production, actual and estimated, has been as follows:

Pneumatic Tire and Tube Production

Year	1914	1915	1916	1917	1918	1919	1920	1921
Casings	*8,983,000	*12,840,000	†18,564,957	†25,840,656	*21,000,000	*35,000,000	*43,750,000	*34,093,750
Tubes	.....	.....	†16,785,398	†23,256,752	*19,000,000	*34,500,000	43,125,000	*42,347,500

*Estimated. †Under 6 inches.

It will be seen that the figures for 1917, the last year prior to government curtailment of tire production, show an increase to nearly four times the output for 1913. Although production in 1918 was curtailed to about 85 per cent of the 1917 output, the 1919 production showed an increase over 1917 of 23 per cent in casings and 48 per cent in tubes. In 1920 the production of casings and tubes increased about 25 per cent, but in 1921, owing to business depression and overproduction the previous year, tire output decreased about 12 per cent. At an average of $22.50 per tire, the retail value of the 1921 product of casings was about $767,199,375, to which may be added $148,216,250 for the tube production at an average of $3.50 per tube, making a total of $915,415,625 for the pneumatic tire and tube output of the calendar year 1921.

American Crude Rubber Consumption for Tires

For the manufacture of the tires and tubes mentioned above the consumption of crude rubber was as follows:

	1919* Pounds.	1920 Pounds.	1921 Pounds.
Automobile and motor truck casings	225,000,000†	204,852,163	197,244,011
Inner tubes	48,000,000†	51,025,392	55,930,402
Solid tires	40,000,000	26,482,247	19,706,505
Other tires and sundries	12,000,000	10,075,927	7,373,327
Totals	325,000,000	292,435,729	280,254,645

* Estimated. † Under 6 inches.

Only the estimated total weights are available for the years 1913-16. They are, in pounds: 1913, 65,880,000; 1914, 89,830,000; 1915, 128,400,000; 1916, 185,649,570. The total 1917 consumption was 233,386,796 pounds, and the 1918 estimated consumption 248,000,000 pounds. As compared with these figures, only 49,911,360 pounds of rubber was required to manufacture the 6,238,920 tires required to meet the 1921 world demand exclusive of the United States, assuming 8 pounds of rubber per tire.

In 1921 over 81 per cent of the rubber consumed for all purposes in the United States was used in the manufacture of tires and tire sundries. This was over 66 per cent of the total india rubber imports into the United States for 1921, as against 51 per cent in 1920, 60 per cent in 1919, 75 per cent in 1917 and 58 per cent of the imports for the fiscal year 1913. The actual quantity of crude rubber used in 1921, however, was not quite 4½ times that for the year 1913, as against almost five times the 1913 quantity in 1919 and about 3½ times that for the year 1917.

American Tire Demand for Original Equipment

Statistics of motor vehicle production in the United States indicate the increasing number of pneumatic and solid tires required annually for original equipment.

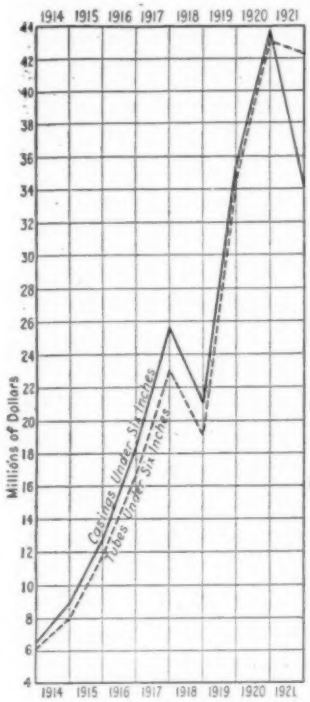
Motor Vehicle Production

Year	Passenger Cars	Motor Trucks	Totals
1913	461,500	23,500	485,000
1914	543,679	25,375	569,045
1915	818,618	74,000	892,618
1916	1,493,617	90,000	1,583,617
1917	1,740,792	128,157	1,868,947
1918	926,388	227,250	1,153,637
1919	1,657,652	316,364	1,974,016
1920	1,883,158	322,039	2,205,197
1921	1,514,000	154,550	1,668,550

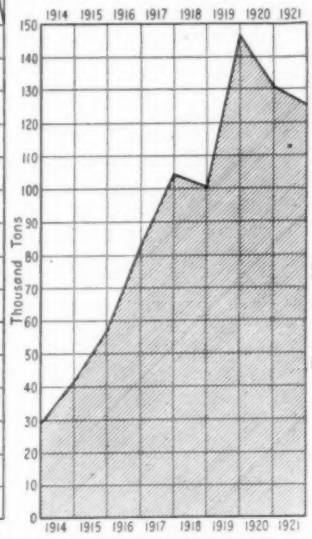
Only a cursory inspection of these figures is necessary to see how the production of passenger cars and correspondingly of pneumatic tires under six inches was curtailed by the war situation of 1918, and the production of trucks and truck tires stimulated. Truck tire production for original equipment showed continuous growth during and since the war period until in 1921 it fell off 52 per cent. In 1920 it had increased to over 13½ times the 1913 production. In 1920 pneumatic tire production for the original equipment of passenger cars exceeded the previous high figure for the year 1917 by 569,464 tires, and exceeded the 1919 requirements by 902,024 tires, this being over four times the 1913 output. It is seen, therefore, that while 1,940,000 tires sufficed for

new equipment in 1913, no less than 8,820,788 were required in 1920, an increase to over 4½ times the 1913 requirements. In 1921, however, the passenger car tire requirements for original equipment were only 6,056,000 tires, a decrease of nearly 20 per cent.

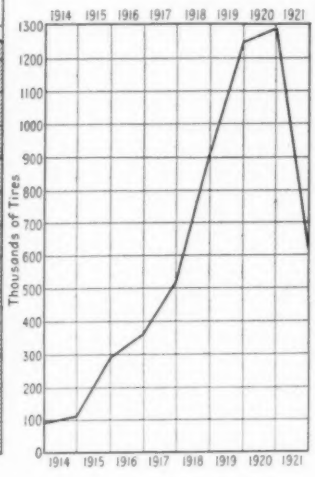
As to the 1922 production of motor vehicles and tires for original equipment, estimates vary rather widely. Prophets, of course, are as fallible as those who do not venture opinions. Furthermore, the major part of all prophecies fail. However, business conditions throughout the country are such that it seems likely that the 1922 production of motor vehicles will quite equal the 1921 output, say 1,750,000 passenger cars and 200,000 trucks, the total 1,950,000 vehicles requiring 7,800,000 tires for original equipment.



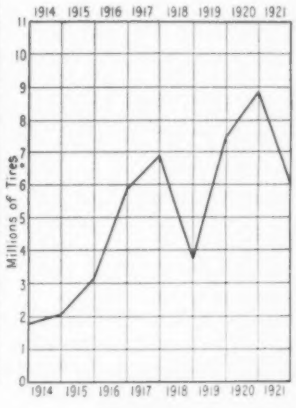
Pneumatic Tire and Tube Production



Crude Rubber Consumed in Tires and Tubes



Truck Tires for Original Equipment



Passenger Car Tires for Original Equipment

Tires in Use in the United States

Of the 10,448,632 motor vehicles registered in the United States during the calendar year 1921, 965,241 were trucks, so that over 10½ times as many pneumatic tires under 6 inches as truck tires were in use last year, the number of each sort, exclusive of spares, being approximately 37,933,564 pneumatic under six inches and 3,860,964 truck tires. One additional tire per car would be a conservative estimate for spares, making the totals, 47,416,955 pneumatics and 4,826,205 truck tires, ro a total of 52,243,160 tires.

On the basis of 40 pounds of rubber average per car for regular equipment and one spare tire, a total of 417,945,280 pounds of rubber was consumed in manufacturing the tire casings in use in the United States last year, an amount almost equal to the total india rubber imports of the United States for the calendar year 1921, which totaled 419,693,120 pounds. On the same basis, only 83,185,600 pounds of rubber was consumed in manufacturing the tire casings in use in the entire world exclusive of the United States.

United States Tire Exports

Export tire trade suffered heavily during 1921 in each of the grand divisions, as shown by the following statistics compiled by the Bureau of Foreign and Domestic Commerce. Total tire exports to all countries for 1921 were valued at $15,954,515, against $52,044,271 in 1920, a decrease of about 69 per cent. Lower prices, however, account for part of this decline.

Total tire exports to all countries fell off in 1914, but gained in 1915, jumped during 1916 to about 4¼ times as much as in 1913, dropped considerably in 1917, but advanced thereafter until 1920 when they were over thirteen times the 1913 total.

A study of the accompanying figures reveals several facts of interest, particularly the remarkable growth of the tire exports to the entire world, notably to South America, Asia, Oceania and Africa, from 1914 to 1920. The combined value of the 1920 business in the four divisions named was over 44 times the value of these exports in 1914. Tire exports to Asia have increased constantly until 1920, when they were over 79 times the 1914 total. In 1921 they dropped nearly 70 per cent. Exports to Oceania fell off in 1917 but the following year had nearly reached the high mark of 1916. In 1919 there was a substantial increase and in 1920 exports nearly doubled but fell off nearly 75 per cent.

North American exports were adversely affected in 1914 and 1915, but thereafter grew steadily until 1921, when they dropped over 50 per cent.

The South American trade maintained a continuous and remarkable growth from 1914 to 1920, inclusive, the value of the 1920 exports being more than 64 times that of 1914, but in 1921 this business decreased nearly 76 per cent.

Automobile Tire Exports

Exported to:	1914*	1915*	1916*	1917*	1918*	1919†	1920†	1921†
Europe	$1,764,240	$2,745,450	$10,992,184	$3,480,114	$1,460,518	$11,907,480	$21,099,189	$5,895,215
North America	1,254,200	1,187,632	2,184,874	3,186,263	4,474,713	5,188,317	9,328,911	4,632,588
South America	115,387	214,068	1,050,398	2,596,936	3,432,181	4,986,024	7,397,032	1,785,363
Asia	64,173	73,430	477,895	810,300	1,194,551	2,970,464	5,080,831	1,524,811
Oceania	279,327	702,877	2,896,401	1,832,244	2,662,422	3,177,431	6,218,151	1,565,934
Africa	27,940	39,813	334,475	424,342	753,286	694,943	2,920,157	550,604
Totals	$3,505,267	$4,963,270	$17,936,227	$12,330,201	$13,977,671	$28,924,659	$52,044,271	$15,954,515

*Fiscal year ended June 30. †Calendar year.

Exports to Africa grew steadily until 1918, when their value reached some 104 times that of 1914, but showed a falling off of about 7¾ per cent for the calendar year 1919 as compared with the fiscal year 1918. The 1920 business, however, increased to over four times the value of that in 1919, but in 1921 fell off over 81 per cent.

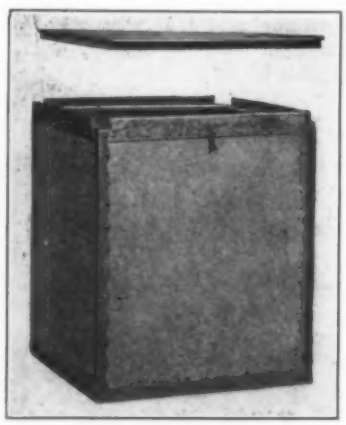
European exports have fluctuated greatly owing to the war and the exchange situation and economic conditions generally. In 1914 they decreased a little, but increased considerably in 1915 and in 1916 jumped to more than five times their value in 1913, after which they declined steadily, the value of the 1918 shipments being only about 74 per cent of the 1913 value. The 1919 exports, however, exceeded those of 1916 by more than 8 per cent and the 1920 exports were nearly double those of 1919, showing an increase to more than six times the 1913 value. The 1921 business, however, fell off over 65 per cent.

Total American Tire Demand for 1922

It is estimated that the 10,448,632 motor vehicles registered in the United States in 1921 will require about 31,345,896 tires annually to replace those worn out at the annual rate of 3 tires per vehicle. To this may be added the 7,800,000 tires likely to be required as original equipment for the 1922 production of some 1,950,000 passenger cars and trucks, making a total visible demand for 39,145,896 tires. That this total appears to be a conservative estimate is indicated by adding 13 per cent—the increase in motor car registration for the year 1921—to the estimated 1921 tire consumption amounting to 34,093,750 tires, which indicates a demand for 38,525,937 tires. As the decreased tire production of 1921 was due in large measure to the unsold overproduction of 1920, it seems likely that the 1922 tire demand may exceed 38,525,937 tires, especially in view of the fact that if the estimated 1922 motor vehicle production of 1,950,000 cars is marketed it means the sale of that many spare tires, which would increase the total tire demand to 40,475,937. Thus statistics and production reports from the principal tire manufacturing centers indicate that following a year of depression the industry may expect 1922 to be a year second only to the record year 1920.

HOW SPLINTERS IN PLANTATION RUBBER CAN BE AVOIDED

The complaints from rubber manufacturers in America and Europe that crude rubber from the plantations is reaching them in an unsatisfactory condition is recalling to many the excellencies of the well known "Venesta" packing case. Such containers, made of smooth, well planed wood, have great strength and rigidity with extreme lightness. They are stayed inside, while on the outside metal straps, bent around all edges and riveted, hold the case together. The preferred sizes are either 21 by 21 by 24 inches, with a net capacity of 9915 cubic inches, 49.3 cubic inches to the pound, and a capacity of 201 pounds per case, or the smaller size, 19 by 19 by 24 inches, a net capacity of 8074 cubic inches, a capacity of 164 pounds to the case, and, as in the larger size, 49.3 cubic inches to the pound.



Venesta Rubber Packing Case

If crude rubber is well cured, thoroughly dried, and carefully packed in containers having sufficient ventilation, no difficulty from tackiness should be experienced, while the use of Venesta cases, according to many authorities, will insure arrival at destination in a condition that is entirely satisfactory.

Factice in Rubber Compounding[1]

Factice is not a substitute for rubber but possesses distinct advantages as a compounding ingredient. Its place in compounding is not as fundamental as that of sulphur, but in certain rubber goods its presence distinctly aids in securing the best results and adds qualities that cannot be obtained by the use of any other type of ingredient. In this respect the chief advantages in the use of factice are good aging quality and good effect in mechanical working of stocks. Factice does not oxidize or become resinous.

In proofing work good aging quality is especially desirable because the finished product offers a large surface to oxidation. In this work excellence of material is not always proportional to the crude rubber content but depends, rather, on wisely compounding ingredients that of themselves do not deteriorate rapidly by exposure to heat, light and air.

Good aging qualities in rubberized fabrics insure retention of flexibility and permanent anchorage of the rubber film to the fabric, as contrasted to peeling.

A series of tests made on a double texture cement compound containing 30 per cent crude rubber with Paris white, sulphur, and brown factice, showed good results as to hydrostatic resistance and strength of anchorage of rubber to fabric, either when freshly made or after actual exposure for six months to weather conditions. When the factice was substituted by rosin, petrolatum, coal tar and mineral rubber, successively, the results were not so favorable.

Good mechanical working qualities come next to good aging in importance. Oil substitutes are of great value for improving the working qualities of proofing stocks.

Smoothness in a spreader stock is essential for uniform coating of proper weight. Application of "ropey" spreader cement is very difficult. If crude rubber is substituted for factice in the usual spreader stock used for sheetings, etc., the material becomes too ropey for use. Although other materials may obviate this trouble, their effects on color and general quality prevent their use. Spreader stocks, therefore, practically always contain brown or white factice.

Factice in a rubber mixing restrains blooming of the uncured stock, also in hospital sheeting it gives a clean appearance and does away with the trouble of cracking and of blooming.

In colored tiling, factice has exclusive advantages; being colorless it does not impair the effect of the pigments used; the tiling lies limp without curling, and does not bloom.

Any rubber compound containing factice runs smoothly through the tubing machine extruding with a finer surface. The product runs truer to gage because of the uniform yielding to the pressure exerted by the screw of the machine.

In cement stocks it is possible to use as high as 50 per cent of brown factice, based on the crude rubber present. In such case due allowance for the slight retarding effect on the cure exerted by the factice should be made by adjustment of the accelerator and curing conditions.

Incidentally factice lowers the volume cost of a rubber stock and facilitates the incorporation of dry filling ingredients during the mixing operation.

[1]Extracts from prize winning papers submitted in the Stamford Rubber Supply Co.'s prize contest on factice.

TEXAS OIL MEN ARE STUDYING THE POSSIBILITIES OF RUBBER seals for oil cans. Two types of these seals have recently been patented by the inventors, who claim that the seals can be used very successfully.

A Glossary of Words and Terms Used in the Rubber Industry—XVI[1]

Pneumatic Tires—Additional Definitions[2]

By Henry C. Pearson

ON AIRBAG. A tire manufacturing term referring to the process of curing a cord tire by using an inflated, canvas-covered rubber bag shaped generally like an inner tube, instead of an iron core, for distention and pressure within a casing placed in a vulcanizing mold.

OPEN-WOVEN. A breaker fabric having fewer than 23 threads to the square inch, as in close-woven breaker fabric; a fabric in which the mesh is relatively large, as in mock leno weave. See Breaker Strip, Mock Leno.

OVERFLOW. Excess rubber which, under pressure, extrudes through the juncture of an overfilled tire mold during curing, causing mold marks. See Mold Marks.

OVERLAPPING. An overlaying of the ends of a piece of tire fabric in a repair to insure better union at the fabric splice in curing.

OVERSIZE TUBE. An inner tube for smaller size cord tires used on clincher rims and designed to avert tube chafing as well as to offset a difference in the "set" of a tube in a clincher and a straightside tire; as, a 31 by 4 tube for a 30 by 3½ clincher cord casing. The reason for using a tube of larger nominal size than the casing is thus explained: Tubes are proportionately longer for clincher than for straightside tires, because in the clincher they must be kept as much as possible away from the rim to avoid bead pinching and tire-tool damage, and hence are designed when out and partly inflated to lie close to the inside crown of the casing. A somewhat smaller circumference is described by tubes for straightside casings, they being designed to lie close to rims and just above the flaps so that the latter may be kept in correct position. See Inner Tubes, Junior Cords, etc.

PADDING. A repair term for material such as old fabric or flaps used in filling up space left between beads by air or sandbags of too small dimension; the application of such material to fill out a casing being repaired.

PAINT. (1) A rubber or rubber-base solution for coating casings and used to preserve or refresh the latter by filling sidewall cuts, checks and abrased spots, and by making worn casings more waterproof. Such coating is believed to retard aging by excluding oxygen and rendering the tire surface less permeable to sun rays. A typical formula requires raw rubber macerated in a solvent until of pasty consistence, then dissolved in linseed oil and heated until the solvent is evaporated, and finally grinding graphite, carbon black, zinc oxide, white lead, aluminum bronze, or other pigment into the mass. The paint is applied as a thin coat after the tire has been well cleaned and dried. A pigment content of albalith, 75 per cent, and zinc oxide, 25 per cent, is sometimes used, being preferred to white lead as it will not darken under the influence of heat and sulphur. Paint is sometimes used by unscrupulous dealers in "seconds" to mask tire defects. (2) A thin paste of powdered talc or mica with which new or repaired casings are coated inside after curing to prevent tubes sticking to the band ply. See Aging, Seconds, Solution, etc.

PATCHING. A term usually referring to the repair of tubes and casings with rubber or fabric solely by means of cold, air, or acid-cure cement, or so-called self-patching material. See Acid Cure, Blowout Patch, Cementless Patch, Repair, etc.

PILE-UP. A hump in a casing usually due to two or more splices in fabric overlying one another.

PLY. One of the primary strands of cotton yarn which compose the yarn or cord used in the weaving of tire fabric. See Plies.

PLY CUTTING. The severing from a roll of builder fabric of strips for carcass building wide enough to extend from bead to bead over the crown of the tire, and so cut that the cross weave shall lie at 45 degrees to the plane of the core, that is, diagonal to the sides of the carcass. See Bias Cut.

PLY FABRIC. Another name for builder fabric. See Builder Fabric.

PRODUCTION PERCENTAGE. An ever-varying factor in tube and casing manufacture, marked in recent years by a very large output of clincher tires, as compared with other types, for equipment of the smaller, more popular-priced automobiles. The approximate proportion for 1921 was: clinchers, 73; Q. D. clinchers, 2; and straightside tires, 25 per cent.

PROFILE. The cross-sectional outline of the exterior contour of a tire or core.

PULL STRIP. A strip of duck frictioned on one side and used in building up core-process cord tires to prevent the "turn-ups" from sticking together before being stitched down.

PULLED RELINER FABRIC. Sound fabric pulled from a used or "adjusted" casing for use in building reliners. Such material is preferred to new tire fabric by some repair men as a casing reinforcement, as it has undergone stretch and has been casing-conformed.

PULLED SKIVED BOOT. A boot made of layers of sound square-woven or cord fabric pulled from a used or "adjusted" casing and smoothly tapered on its edges. See Boot, Pulled Reliner Fabric, Reliner, Skive.

PULLED SKIVED RELINER. A reliner made of plies of sound square-woven or cord fabric pulled from a used or "adjusted" casing and suitably feather-edged. See Pulled Reliner Fabric, Reliner, Skive.

PUNCTURE. To pierce a repair to release air from blisters or pockets, as with an awl.

REBUILDING FABRIC. A close, plain, square-woven fabric used for repair, made of 14-ounce good grade cotton and about 3 ounces lighter than regular building fabric. It is commonly supplied in rolls 12 inches wide with both sides of the fabric frictioned, as bareback with but one side frictioned, and with both sides frictioned and one side skim-coated. Also called Repair Fabric. See Fabrics.

RECAPPING. Sectional repair for a tread damaged in its center, commonly by a fender bolt. See Sectional Repair.

RECOVER. A repair term for a new cover put on a worn casing, and often including renewal of tread and sidewalls.

RESILIENCE TEST. The final operation in tire making. The determination of the actual or comparative ability of a tire to quickly regain normal contour without appreciable change or injury upon release from road pressure, or to similarly recover from obstacle shock or other stresses; ascertaining the degree of springiness in a pneumatic tire. It is best effected with a resiliometer, an instrument indicating the actual amount of energy expended by the elastic object under test and also employing a self-recording device to denote diagrammatically the relative resilience, as compared with a standard, of tires rebounding when dropped from a height, struck with a "pile driver," or moved over or against impediments. See Elasticity, Resilience, Road Pressure.

RETREADER. One who supplants worn or damaged treads wholly or in part with new material. An apparatus for retreading tires

[1]Continued from THE INDIA RUBBER WORLD, June 1, 1922, pages 605-606.
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containing steam-heated 1/5, ¼, or 1/3-circle mold cavities. See Retread, Tread, Vulcanizer.

REWIND. The operation of rewinding fabric or liners to straighten them.

RIDGING. A casing inside repair trouble due to overclamping or the use of an excessively long airbag which forces the inner plies toward the ends of the retread molds. See Buckling.

RIM CLAMPING. Application of the wedge principle in fastening a demountable rim to a metal band on a wood felloe, and in which a metal ring (wedge-shaped in cross-section) is placed on the outer side of a wheel between beveled edges of felloe band and rim and then forced into the V-shaped recess with a wedge clamp (five or six, sometimes more, being used) set upon a bolt passing through the felloe. Tightening a nut on the outer side of the clamp drives the sharp side of the ring between the band and the rim, expanding the latter and locking it securely. A corresponding bevel, with biased surfaces slidable, on the opposite side of band and rim permits of uniform diametrical distention of the rim.

RIM FILLER. A hard rubber strip or ring, open or continuous, placed at either side of a rim channel and so molded as to fill the space on the outer side of the beads so that a clincher tire may be adapted to a straightside rim or a straightside tire to a clincher rim; sometimes used instead of a universal rim. See Bead Filler, Rims, Universal Rim.

RIM-FRACTURED CASING. A casing in which a more or less continuous break has been caused near its base, a condition commonly resulting from the application of a straightside tire to a clincher rim and in which the latter has on one or both sides of the tire a sharp, narrow, inadequate grip. The undue strain often loosens the bead core, making the casing irreparable.

"RIM-HOPPERS." Tires with irregular beads, or of such asymmetrical construction and defective material that they often fail to hold on a rim when in service. A common trouble with gyp tires. See Gyp.

RIM NUT. A nut placed over a valve and affixed to the inner side of a rim to hold the valve in place. See Rim, Valve.

RIM-REINFORCED INNER TUBE. An inner tube which is strengthened on the side adjoining the rim with an extra thickness of gum or a layer of fabric in order to protect it from rim rust, bead pinching, etc. See Inner Tube, Nipping.

ROAD PRESSURE. The force with which an inflated tire, alone or with its load, bears upon a road surface, materially affecting tire service and highway efficiency, and conditioned upon tire inflation rather than weight distribution. The pressure of a pneumatic tire is held to be uniformly the same per square inch of contact with the road, being dependent solely upon the inflation pressure of the tire, whether the vehicle supported be empty or loaded. As illustrating this characteristic of the pneumatic tire, a typical case is cited in which a 12-inch truck tire carrying 140 pounds air pressure gives a weight, on its own account, of 140 pounds per square inch of road contact. When a load of 8,500 pounds (as allowed for a 48 by 12 tire) is carried it is held that the road pressure nevertheless remains the same, the area of contact being merely increased to 61 square inches so as to distribute the added load. Hence in an impressible road surface, the rut made by the added load would not be deeper but only wider. See Axle Load, Load, Inflation, Pressure.

ROAD RESISTANCE. The force of inertia or check to motion offered by a highway to a tire in action; an important factor affecting tire service and invariably connoting a direct loss in power expended in propelling a vehicle. Road resistance is attributed to flexure at the point of road contact of the materials composing the tire. The dissipation of energy and the marked rise in temperature are likened to the action of a friction brake, although in one case the material is rapidly bent while in the other it is slid against a resisting agent. Road resistance and heat generation are increased by underinflation and overloading, and are experienced in a greater degree with fabric than with cord tires. See Inflation, Overloading, Road Pressure, Traction Wave, Underinflation.

ROLLING. A manufacturing and repair term for the smoothing down, to effect better adhesion and to expel air bubbles, of layers of cords, cord fabric, square-woven or other fabric and rubber in a carcass by means of straight, concave, or convex metal cylinders or broad-rimmed wheels.

ROUNDING. The operation of curving the margin, particularly the ends, of a repair in a tube or casing to lessen tendency to split.

ROVING CORD. A cord fabric made up from mill waste and much inferior—being shorter-fibered—to regular cord fabric.

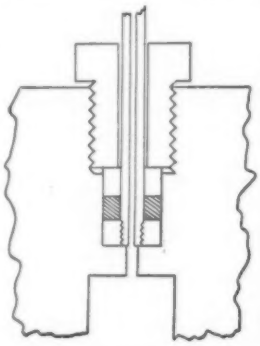
RUBBER BLOCK. A repair term for a round, square, or oblong flat, thick, heavy piece of cured rubber placed on a tube repair being made on a hot plate. It provides elastic pressure, takes up excess gum at the edge of the repair, and is reinforced with a similar shaped block of wood in clamping.

RUBBER-LINED TIRE. A casing—usually of cord construction—the band or inside ply of which is surfaced with compounded rubber to enhance the tire's resiliency, to cushion the inner tube, and to save the latter from friction. See Band Ply, Resilience.

RUBBER RIM FLAP. An endless band of tube stock rubber to be stretched over a rim—usually a clincher—to protect a tube from rim rust and grit cuts.

Rubber Packing for High Pressures

The use of rubber as packing to hold very high pressures of air is explained in an article by P. W. Bridgman.[1] The design of the method of holding the packing is more important than the material used, which may range from steel to soft rubber. The important feature of the design is to support the packing material against side flow and to eliminate twisting pressure. If the pressure in the vessel rises too high the packing in a joint of this kind will be squeezed bodily into the metal of the pipe which will be pinched off and escape by blowing through the screw plug. Ejection is with great violence, and is one of the chief sources of danger in working with extremely high pressures. Plugs have been cut off and blown through eight or ten inches of wood in this way. Such a plug is seen in the illustration. At the point A the solid steel rod was pinched off by the soft rubber packing. The significant thing in this pinching-off effect, from the point of view of the theory of rupture, is that there is no stress pulling apart the fibers that separate. The reason is that the end of the pipe is unsupported, so that there is no force along the length of the pipe. Rupture occurs because the increase in length of the longitudinal fibers of the pipe has become too great. It is exactly like squeezing off a string of putty in the hand.



Arrangement of Packing Against Heavy Pressures

Steel Rod Cut Off by Soft Rubber Packing

[1] "Methods of Handling Very High Pressures." Compressed Air Magazine, January, 1922.

Inspecting and Drying Cotton Fabrics in Rubber Factories

An Ideal Layout—Fabric Testing and Inspection—Drying Machines

IN every branch of rubber manufacture, such as belting, hose, carriage cloth, raincoats, tires, and footwear, where fabrics are processed with rubber compound, the inspection and drying of the fabrics used form an integral unit which, when functioning properly, insures efficient operation and quality production.

The man in charge of the fabric department should be thoroughly conversant with textile mill procedure as well as the various subsequent operations in his own plant so that he can differentiate between defects which would cause serious difficulties and those of the minor variety. The latter should always be brought to the attention of the mills at fault as an indication that inspection is being maintained. For it usually happens that rubber factories that have strict inspection buy from high grade mills and receive fabrics that are as nearly up to specifications as they can be.

Location of Department

Fabric inspection and fabric drying should be segregated in one department as they function together. A clean, well lighted room, free from dust and with adequate heating facilities, but also one that is accessible to the calendering and cutting departments, should be chosen for this work.

Laboratory Tests

When a shipment of fabric of a certain grade is received, a sample about a foot square is first sent to the laboratory for testing. This constitutes a preliminary inspection which in the case of tire fabrics is very important, but in the case of sheetings or osnaburgs is useful as a basis of comparison only.

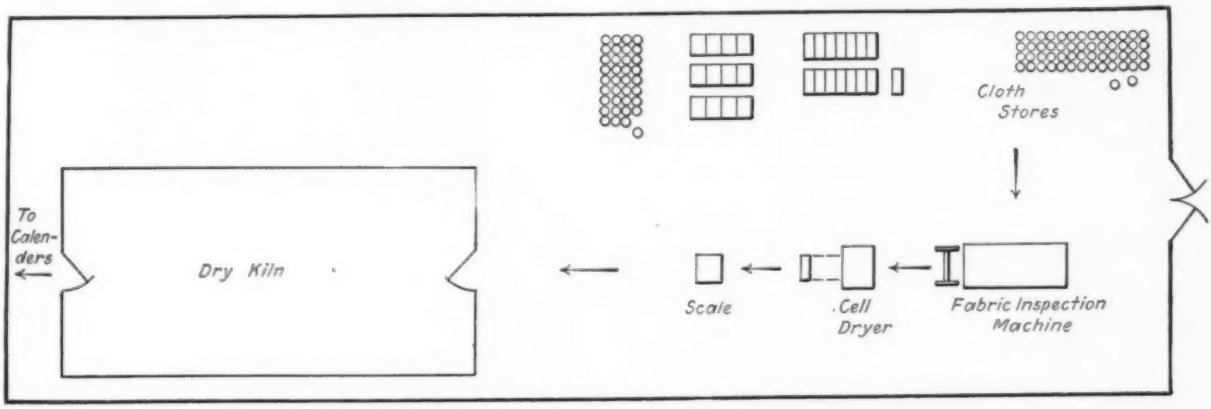
Among the laboratory tests usually made are the tensile strengths of warp and filler, obtained by use of a Scott testing machine. The strip method as outlined by the American Society for Testing Materials is the one most generally used. All samples should be reduced to a bone dry condition before testing, as the tensile strength is greater according to the moisture content. Where materials are sent to bleacheries or dyehouses to be bleached or dyed, samples should be tested in the gray goods and again on their return to determine how much the bleaching has weakened the fabric. Another sample should be put through the cure it is to receive to ascertain if the dye is fast, in case it is to be cured in steam, or if the bleached material will stain. Difficulty is often experienced in bleaching and dyeing, owing to the foreign substances in the gray goods. Bleached goods will not usually stand a heat of more than 270 degrees F., which means that tennis manufacturers must adapt their compounds for white sneakers to cures below this temperature.

To see that the fabric comes up to specification as regards thread count comes under the head of preliminary inspection also. If a manufacturer specifies a thread count of 48 by 48 on a 2.50 yard sheeting, the fact that he receives 56 by 60 may render the cloth unsuitable for his purposes. On tire fabrics, of course, the inspection is more rigid on tensile strength, thread count, length of fibers, off square, and crimp.

Physical Inspection

When the inspector receives his preliminary report from the laboratory he is ready to give the fabric a physical inspection on a fabric inspecting machine. In the case of sheetings and inexpensive drills such inspection can be made as the fabric is being run through the cell dryer, but in the case of raincoat fabrics, tire fabrics, and tennis shoe ducks where even minor defects may mean spoiled work later on, the separate inspection is a necessity. The first thing the inspector looks for is general appearance of the fabric. This is perhaps a vague term to the person unversed in this work, but in the mill it means something quite specific which may determine later on whether the finished goods remain on the dealer's shelves or move on to the consumer. If the roll in question is a piece of bleached duck which is to go into a high grade tennis shoe, the inspector must visualize that cloth on the shoe and determine whether it has the intended appearance. If it happens to be a piece of tweed for a high grade raincoat and in reality is going to make it look like an army slicker, he must be prepared to say so, and then ascertain what is wrong. Many a piece of army duck comes back from the bleachery looking like a 3.00 yard sheeting.

In the case of dyed materials, the inspector should have a shade chart giving the colors specified by the manufacturer and throw out all rolls which do not match, in most cases returning them to the dye house for redyeing. In canvas footwear manufacture this is very important as a shoe with a quarter of one color and a

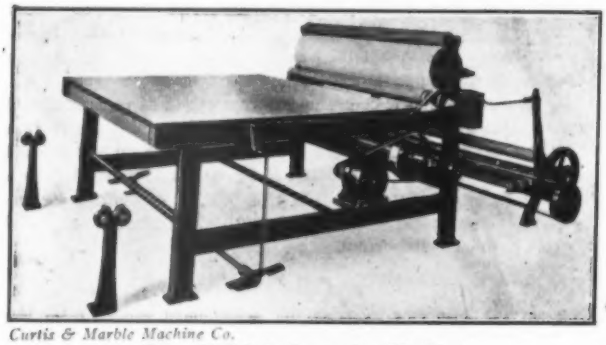


Layout of a Fabric Inspection and Drying Department

vamp of another is either a "second" or must go to the shoe hospital for redyeing which is a slow and expensive process when attempted in small units. Dyed goods should be kept out of the sun to prevent fading.

Weaving Defects

As the fabric passes over the machine, warp knots, in the case of tire fabric, especially cord, must be counted, and if they exceed



Curtis & Marble Machine Co.

Type H Fabric Inspecting Machine

25 per 100 yards, the roll should be rejected. Other items that must be noted are bad startups, beatups, broken picks, broken threads, drop end yarn, floats, and holes, all being weaving defects.

Oil stains and mildew must be watched for carefully. Oil stains will not rubberize properly and will cause a soft or weak spot in the finished article which may cause a blowout if it be an automobile tire, or a loose ply if it be a belt. If the oil stain has been removed it should be ascertained that no chemical was used which may have weakened the fabric. Mildew occurs when the fabric has been in storage for a long period or exposed to rain or extreme dampness in transit. It is detected first by the well known musty odor, secondly by the brownish, speckled stain which may have eaten a hole in the fabric. A roll which shows traces of mildew should be tested with extreme thoroughness before using, and then all bad parts should be cut out.

Damage from Handling

Another class of defects which is more obvious than the others occurs in faulty wrappings or carelessness in handling. These should be reported immediately as they may be the basis for a claim against the railroad, and if the damage is of any consequence, the roll set aside in its original wrapper for the shipper's inspection. Cord fabric is mostly likely to be damaged in transit, especially if the rolls have been piled carelessly or bruised. This will cause broken filling, and if the rolls are not cased with disks on the ends may mean extensive damage on the outer edges.

All rolls should be measured for their width and length to check the manufacturer's measurements. The matter of standard widths where the fabrics are to be cut several thicknesses or plies at a time is an important one from the standpoint of waste.

Inspection of Knitted Goods

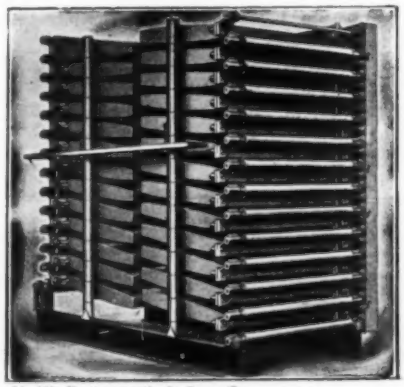
Stockinettes for footwear manufacturing are woven in a tube, scoured, dyed, then gummed or sized, and cut. They should be inspected particularly to determine whether an undue amount of shrinkage has taken place in these processes which may cause uneven edges. The sizing is important to prevent the edges from curling up when the rolls are dried. Curled up edges cause poor work at the calender and excessive scrap in cutting. Part woolen goods, which are used especially in the manufacture of gaiters, arctics, boots, and lumbermen's linings, should be checked for weight—for instance, 6¼-ounce wool means 6¼ ounces per square yard. Jersey cloth used in light overshoes—which now form the bulk of the business, owing to the large number worn by women last year—should be inspected for the finish of the face of the cloth. There are many grades of this material on the market, and a smooth, velvet-like finish is a desired quality in this dressy shoe, in contrast to a fuzzy, shoddy appearance found in some grades of this material.

The Drying Process

All fabrics used in rubber manufacture are thoroughly dried before calendering. This process, which is in reality ironing on a large scale, is necessary to expel moisture and make perfect goods. Moisture is the foe of the rubber manufacturer. Left in the production even in infinitesimal amounts, it may cause blistering during vulcanization, or if not thoroughly expelled in tire fabrics will cause a poor union between the rubber and cotton and result in ply separation in the tire.

The machine most widely used for this purpose is the cell drier, made up of any desired number of units, each unit consisting of a cell with its brass roll, sprocket and bearings; the bearing brackets being dovetailed and bolted to the cell. The cell is a hollow plate with smooth curved surfaces. The machine has no frame, the cells being piled one upon another, in one, two, or three stacks, according to the amount of moisture to be eliminated and the speed at which the drying is to be done.

Another type of tire fabric drier is the multiple drum machine.



H. W. Butterworth & Sons Co.

The Cell Drier

This consists of six hollow metal drums which are steam heated and dries the fabric in the same way that the cells do in the cell drier.

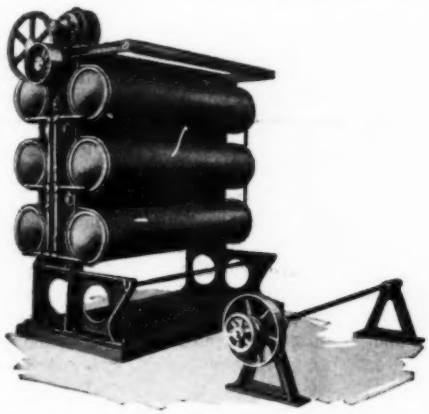
Auxiliary winding apparatus is necessary to handle the fabric and wind it into even, tight rolls for calendering. The windup which rolls up the fabric as it comes from the drier must be equipped with a friction clutch or a slipping belt device because as the size of the roll increases, the speed of the drier remains the same. There are machines on the market to keep the edges straight, consisting of two-piece rollers set close together in a semicircle which keep the cloth smooth and the edges even. Other apparatus of this character consists of brushes to remove dirt, dust, or loose tufts of cotton, and series of rollers which assist the tension.

The operation of the drier calls for certain practical skill which, while not equal to that of a calender man, determines the quality of the work to a large extent. The drier is equipped with a steam gage which must be watched constantly to determine whether or not the cells are kept at the specified temperature. The machine is usually geared to operate at variable speeds, high speed for light sheetings, and slower speeds for woolen goods and tire fabrics which contain a larger percentage of moisture. Tire fabric is dried at slow speed of about 15 yards per minute.

Determination of Moisture

All rolls should be weighed before drying and immediately afterwards. This is a fairly accurate indicator of the efficiency of the drying, and if a series of records is kept showing the moisture losses on each class of material, it can be readily determined whether all the moisture has been expelled or not.

Maximum moisture tolerance in United States Army specifications is 5 per cent. Drying loss will rarely exceed this amount



Banner Machine Co.

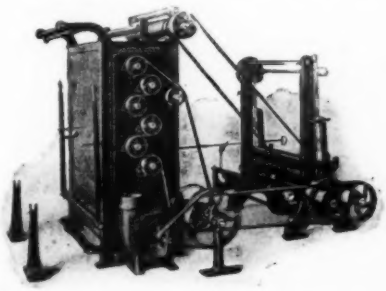
Fabric Drying Machine

except in goods of woolen composition where it will sometimes run as high as 7 or 8 per cent.

Another factor in the drying problem is keeping the rolls dry after the moisture has been expelled, for cotton and woolen fabrics take up moisture if left exposed to the atmosphere for even a brief period. Furthermore, a hot roll of cloth takes the friction and skim better and makes the calendering operation more efficient. In some large mills the cloth is run direct from the cloth drier to the calender, the machines being set adjacent to one another. If this is not possible other means must be taken to keep the material dry until ready for use.

The Use of Dry Kilns

General practice is to equip the fabric department with a dry kiln where the rolls are placed immediately after drying and kept there until the calender is ready to process them. Two problems confront the manufacturer in connection with the dry kiln. The first is to maintain the proper temperature—usually 150 degrees F. or more; the second is to maintain a low percentage of humidity in the kiln. The first problem is solved by the use of a self-



Curtis & Marble Machine Co.

Heath Vertical Brushing and Rolling Machine

operating temperature controller, while humidity is checked by means of a wet and dry bulb thermometer which records on a chart the percentage of moisture in the kiln. Unless a proper ventilation system is installed in the kiln, however, it will be found that the humidity in the kiln will vary with that of the general atmosphere. If it is kept below 30 per cent good results can be obtained.

Tire Fabric Drying

Some tire factories maintain the practice of double drying fabric before frictioning. By this method the roll is dried once at slow speed, placed in the kiln, and just before it is to be calendered it is run through again at high speed. This makes the roll piping hot when it reaches the calender and allows the rubber to penetrate the fabric to a greater degree on frictioning, which means a better carcass in the tire. Results show that often an additional per cent or half of one per cent of moisture is expelled on the second drying.

The inspection and drying of fabrics for rubber manufacture can best be described as one small unit among a large number of more complicated processes, but it takes only an aggregate of small units neglected to make a good product into a poor one.

Judicial Decisions

Treasury Decisions

No. 44971. Protest 937288-62815 of G. W. Sheldon & Co., Chicago.

RUBBER SOLES AND HEELS made of cotton and india rubber, classified as wearing apparel under paragraph 256, Tariff Act of 1913, are claimed dutiable as manufactures of india rubber at 10 per cent under paragraph 368.

Opinion by Weller, G. A. On the authority of G. A. 8445 (T. D. 38763), relating to similar merchandise, the sole and heel attachments in question were held dutiable under paragraph 368 as manufactures of india rubber.

No. 44976. Protest 940013-63035 of G. W. Sheldon & Co., Chicago.

RUBBER SOLE AND HEEL ATTACHMENTS, Cochrane's, classified as articles of wearing apparel at 30 per cent ad valorem under the provisions of paragraph 256, Tariff Act of 1913, are claimed dutiable as manufactures in chief value of india rubber at 10 per cent under paragraph 368.

Opinion by Weller, G. A. On the authority of Abstract 44145, relating to similar merchandise, the rubber sole and heel attachments in question were held dutiable under paragraph 368 as claimed.

No. 44982. Protests 938545, etc., of Pacific Trading Co., San Francisco.

SPONGE BALLS classified as toys at 35 per cent ad valorem under paragraph 342, Tariff Act of 1913, are claimed dutiable as manufactures of rubber at 10 per cent under paragraph 368. One protest claimed under paragraph 369.

Opinion by Sullivan, G. A. Inasmuch as both the rate and merchandise are correctly stated the protest claiming under paragraph 369 was held sufficient. G. A. 8278 (T. D. 38090) G. A. 8412 (T. D. 38629), and Michelin Tire Co. vs. United States (6 Ct. Cust. Appls. 283; T. D. 35507) cited. The proof showing that the rubber sponge balls in question are not exclusively used by children, and that they are reasonably fitted for the use of adults, they were held dutiable as manufactures of india rubber under paragraph 368 rather than as toys under paragraph 342. Illfelder vs. United States (1 Ct. Cust. Appls. 111; T. D. 31115) followed.

Protest of Max Kalter Mercantile Co., Inc.

The Board of United States General Appraisers overruled protests of the Max Kalter Mercantile Co., Inc., regarding rubber boots which, it is asserted, were surplus army supplies purchased from the British Government. Duty was assessed on these boots, which were in ten different styles, and with rubber as the component material of chief value, at the rate of 30 per cent ad valorem under paragraph 256 of the Tariff Act of 1913. Claim was made for classification as manufactures in chief value of india rubber, not specially provided for, with duty at the rate of but 10 per cent ad valorem, but this was denied by Judge Weller.

The Editor's Book Table

"RECENT DEVELOPMENTS IN THE CHEMISTRY OF RUBBER." By William C. Geer, vice-president, The B. F. Goodrich Co., Akron, Ohio. *The Journal of Industrial & Chemical Engineering*, May, 1922, pages 369-375.

In this paper Doctor Geer reviews the early development from the discovery of crude rubber through the discoveries of Goodyear and Hancock in vulcanization, citing the growth of the rubber industry from $7,000,000 worth of products in 1850 to $1,122,000,000 worth in 1919. The successive chapters treat of crude rubber from the viewpoints of cultivation, latex, and composition, and the bearing of colloidal chemistry on the study of rubber characteristics. Vulcanization processes are reviewed and the history of the use of accelerators and their function are touched upon. The significance of particle size as affecting the properties of rubber mixtures illustrated in the use of carbon black and zinc oxide is explained. Doctor Geer pays tribute to the practical rubber man in his handling of compounding problems, concluding with some excellent suggestions on specifications for rubber goods, and a résumé of the future bearing of the rubber industry on the world's progress.

"PLANTATION RUBBER IN THE NETHERLANDS EAST INDIES and British Malaya." By John A. Fowler, American Trade Commissioner for the Far East. Prepared as a supplement to *Commerce Reports*, and published as "Trade Information Bulletin No. 27," by the Rubber Division, Bureau of Foreign and Domestic Commerce, Washington, D. C. Paper, 6 by 9 inches.

Data of much importance to the rubber industry appear in this bulletin, which apparently is an able summing up of conditions in the countries under consideration. There are thoughtful discussions, under various headings, of such subjects as: "Cultivation of Rubber in the East Indies"; "Diseases of Rubber: Prevention and Cure"; "Areas Planted in Rubber"; "Exportation of Rubber and Production Statistics"; "Grades and Prices of Rubber"; and "Organization of a Typical Rubber Estate in East Java." Some interesting information appears under the heading "Planters' Societies for Scientific Research and Mutual Protection."

"FACTS AFFECTING THE IMPORTATION OF RUBBER PRODUCTS into Sweden, Switzerland, Egypt, Spain and Portugal." Separate monographs prepared by the Rubber Division, Department of Commerce, P. L. Palmerton, chief. Published by Bureau of Foreign and Domestic Commerce, Washington, D. C. Paper, 8 by 9 inches.

As in the corresponding monographs, mentioned in previous issues of THE INDIA RUBBER WORLD, the statistics concerning the rubber industry in these countries show a more or less regular development, particularly in the import trade. In Spain, however, the outlook is decidedly encouraging, as the figures show a steady growth in the exports of rubber manufactures. Our trade with this country and Portugal shows a surprising increase since 1913, particularly in the case of automobile tires. In all of these countries, however, the French Michelin tire is in general the most popular, followed by the English Dunlop. These monographs contain many items which are invaluable for the rubber manufacturer.

"FACTS AND FIGURES OF THE AUTOMOBILE INDUSTRY—1922." Published by The National Automobile Chamber of Commerce, Inc., New York, N. Y. Paper, 6 by 9 inches.

This annual publication, with its comprehensive statistics covering every department of the automobile industry, well repays careful study.

Of particular importance are the figures regarding motor vehicle registration and production for 1921. There are 10,448,632 cars and trucks in the United States, a gain of 13 per cent over 1920. The number of motor vehicles produced is estimated at 1,668,550, the number of cars being 1,514,000, and the number of trucks 154,550, representing a decrease of 24 per cent from 1920.

The various data of interest to the rubber trade include items regarding 1921 tire production; a comparison of automobile tire exports from the United States for the years 1915 to 1921 inclusive; and a table of standard speed ratings recommended for motor trucks, with special reference to tires. The number of tire casings produced in 1921 is stated as being 27,275,000, and the value of tire replacements is estimated at $542,358,420.

New Trade Publications

IN THE MAY AND JUNE ISSUES OF *Chords*, THE HOUSE ORGAN of The Odell Rubber Co., South Bend, Indiana, particular attention is called to the company's lately inaugurated advertising campaign, and also to its recent cut in tire prices. *Chords* attends especially to the interests of tire dealers.

A WELL-ILLUSTRATED LITTLE BULLETIN, PARTICULARLY APPROPRIATE for this outdoor season, entitled "Hiking and Camping," is issued by The Beacon Falls Rubber Shoe Co., Beacon Falls, Connecticut. A short supplementary article gives some interesting points regarding the game of basket ball, while the entire bulletin well displays the useful features of this company's "Grip Sure" shoes, and "Top Notch" rubber-soled canvas footwear.

AN ATTRACTIVE CATALOG ENTITLED "SUPPLIES, SHOE FINDINGS AND Repair Shop Equipment," has been recently issued by The United Shoe Machinery Co. of Canada, Limited, Montreal, Canada. This publication, which is well printed and illustrated, and has a good index, is conveniently arranged in five parts, the foreword stating that it was prepared with the needs of the shoe repairer particularly in mind. A page is devoted to a description of finishing wheels and rolls of corrugated rubber, and another to various makes of rubber heels.

AN EXCELLENT, BUT BELATED CALENDAR, SENT BY THE COOPER-Hewitt Electric Co., Hoboken, New Jersey, contains photographic reproductions of Cooper-Hewitt lighting installations, as instanced at twelve important industrial plants.

ADDITIONS TO NATIONAL GROUP OF CULP-PLAN ASSOCIATED FACTORIES

George K. Culp, Inc., announces long term contracts with two midwest tire factories which will produce exclusively for the Culp-Plan Associated Stores.

The Sioux City Tire & Manufacturing Company, Sioux City, Iowa, manufactures two lines of high class fabric tires, each line to be made in both rib tread and non-skid designs. The Sioux City Culp-Plan line is regular standard size. The Sioux Culp-Plan is made oversize.

New manufacturing and management personnel at the Sioux City factory has been organized, headed by P. E. Werner, general manager.

The Rubber Manufacturing Corporation of Kansas City, Kansas, builds one line of high quality fabric tires as "Stephens" but which will now bear the Culp-Plan mark in addition. The Sioux City factory is to be known as Culp-Plan Associated Factory No. 26 and the Kansas City Plant as Culp-Plan Associated Factory No. 48.

These two factories are the first west of the Mississippi to be associated under the Culp-Plan and the great value of these latest additions to the Culp-Plan Associated Manufacturers lies in the reduced cost of transportation to western stores on fabric tires, as well as reducing time of delivery. Warehousing arrangements are being perfected in various cities in the Far West.

LEVULINIC ALDEHYDE FROM OXIDIZED RUBBER

G. Stafford Whitby and H. N. Stevens have identified levulinic aldehyde in tacky rubber. Professor Bruni and Mr. Pelizzola[1] have reported on the reaction of this material in tacky rubber, and Frederick Kaye[2] has found it in samples of aged rubber.

[1] The India-Rubber Journal, March 18, 1922; [2] Id., April 8, 1922.

REPLETE WITH INFORMATION FOR RUBBER MANUFACTURERS—H. C. Pearson's "Crude Rubber and Compounding Ingredients."

What the Rubber Chemists Are Doing

Cold Vulcanization[1]

THE consideration of cold vulcanization as invented and developed by the author and known as the Peachey process. This process is based upon the fact that when rubber is treated alternately with sulphur dioxide and hydrogen sulphide, these gases are absorbed and, reacting in the material, produce an active form of sulphur which combines with the rubber at the ordinary temperature, bringing about vulcanization. The process is not only applicable to rubber in its ordinary dry form but can also be applied to rubber in solution.

Vulcanization in Solution

If a solution of rubber in benzol or naphtha containing hydrogen sulphide is mixed with a solution of sulphur dioxide in benzol, viscosity begins to increase, and after a short time the solution sets to a jelly which, after evaporation of the solvent, becomes vulcanized rubber.

Practical Vulcanization

The applications of the basic principle of the process may be classified as: (1) the chamber or dry gas treatment, and (2) the two-solution process.

Chamber Process

In the chamber process the rubber, preferably in thin sheeted form, is exposed to sulphur dioxide gas. This operation is conducted in a chamber constructed of aluminum, wood or stoneware or of sheet iron covered with a protective coating of bitumastic paint, or duroprene.[2] The ideal metal for the chamber is aluminum as it is not corroded by the gases singly or conjointly.

After ten minutes' exposure to the sulphur dioxide a current of air is blown through the chamber to sweep out the gas, and remove the layer of gas concentrated on the surface of the material. The short air blow is necessary to prevent blooming on the surface of the goods due to the interaction of the hydrogen sulphide with the surface sulphur dioxide.

The chamber is next filled with hydrogen sulphide and the material left in contact with this gas for about 30 minutes when vulcanization is complete. The degree of vulcanization is governed by the time of exposure to sulphur dioxide, and it is advisable in every case to expose to an excess of hydrogen sulphide until no free sulphur dioxide is left in the material.

Working Thickness

The working thickness in dry chamber vulcanizing depends on the nature of filling materials in the rubber compound. With pure rubber penetration is less than with compounded rubber. In presence of porous or fibrous materials, such as leather buffings, wood meal, wool or cotton waste, cork dust, etc., penetration is greatly facilitated, even through sheets one-half inch in thickness. Normally sheets vary between 1.9 and 3.5 mm., which are the two common English linoleum standards. Such sheets, however, may be built up like plywood to any desired thickness after vulcanization by the use of the two-solution cementing process.

The gas process is exceedingly simple and applicable to the vulcanization of proofed fabrics and of dipped and surgical goods and has been proved to be highly satisfactory in curing articles made of pure rubber.

[1]"Cold Vulcanization," by S. J. Peachey, Institution of Rubber Industry. The India-Rubber Journal, March 18, 1922, page 19. THE INDIA RUBBER WORLD, August, 1921, page 849.

[2]Duroprene is chloride of rubber.—THE EDITOR.

Two-Solution Process

Vulcanization by the two-solution process may be made to yield any desired coefficient of vulcanization from 1 up to 15. In practice a 12.5 per cent solution of masticated rubber in benzol or naphtha (pyridine free) is used saturated with hydrogen sulphide. A second solution is prepared consisting of 2.4 g. of sulphur dioxide per 100 cc. of solvent. To prepare a gel of vulcanized rubber with a coefficient of 2.5 one mixes 10 volumes of the first solution with one volume of the second, shaking or stirring thoroughly to obtain uniformity of mixing. Using a solution of rubber saturated with hydrogen sulphide always insures the presence of an excess of this gas, and the degree of vulcanization is then governed entirely by the amount of sulphur dioxide solution added.

Poured or Wet Molded Goods

The two-solution method of vulcanization has been applied to the wet molding of goods which have previously been produced by the dipping process, such as nipples. The idea has also been extended to cover molded hot water bottles, galoshes, tubing and hose.

Wet Reforming Process

A method for reworking vulcanized waste rubber, remotely analogous to that invented by T. Gare, is possible by the wet vulcanizing process. By reforming is meant the remolding and revulcanizing of ground vulcanized scrap without reclaiming.

The method of Gare consisted in grinding waste rubber into fine powder. This powder is then placed in a cold mold and the contained air expelled by pressure. Finally the mold and powdered rubber waste are heated to about 400 degrees F. to perfect mechanical fusion into the molded article.

By the wet process the selected grade of ground waste rubber is mixed with a quantity of rubber solution corresponding to about 5 per cent new rubber to waste. The solution is previously saturated with hydrogen sulphide and mixed with the necessary amount of benzol-sulphur dioxide solution. The mixing is effected in any suitable machine and the damp mixture is then pressed in molds. Vulcanization of the binding solution takes place in about 20 minutes when the molds are opened and the articles allowed to dry. A perfectly consolidated mass of reformed rubber is obtained, with high tensile strength and excellent physical properties.

Two-Solution Process for Tire Work

Another important application of the two-solution process is to the repairing of tires. If a 12½ per cent solution of rubber in benzol is saturated with hydrogen sulphide and mixed with one-tenth of its volume of a 2.4 per cent solution of sulphur dioxide, the mixture may be employed as a cement for joining canvas duck to itself or to rubber, with remarkable strength.

In the case of floor coverings, the odor of the curing process adheres to the goods for about a fortnight. Besides organic fillers used in compounding, the only mineral fillers used have been limited to basic oxides. The new process is not intended to replace the customary hot process but it will produce effects not obtained by the hot cure.

Effect of Surface Slime on Rate of Vulcanization

The following extract is from a research report by Henry P. Stevens,[1] summarizing a matter of much practical interest.

The conditions which control the production of a fast-curing

[1]The Bulletin of the Rubber Growers' Association, Volume 4, No. 1, January, 1922, 46-49.

rubber are difficult to define. The micro-organism, presumably a bacterium, is resistant to phenols and mercuric chloride, but is inhibited by smoking or by formaline. In other instances, smoking is without effect, or actually results in a faster-curing rubber. The micro-organism theory offers no explanation of the fast-curing property of rubber produced by evaporating latex to dryness. In this process the whole of the serum-soluble substances are retained by the rubber, which is about twice the amount found in plantation rubber as ordinarily prepared. The serum contains accelerating substances but in small amount, insufficient to account for the very considerable increase in rate of cure observed. Experiments with dried latex have been in progress for some time and it is hoped soon to place the results on record. Several experiments have now been made to compare the rate of cure of surface portions with the interior portions of a piece of coagulum. In most cases the inner portions cured faster. Allowing for unavoidable variations, it can at least be said that the surface portions do not vulcanize appreciably faster than the inner portions, as would have been expected on account of the alkaline slime on the surface.

Methods of Analysis

Free Sulphur in Dry Heater Cured Goods

By S. G. Byam[1]

The problem of preventing bloom on dry heat cured goods illustrates the value of a rapid method for determination of free sulphur in factory control work. The avoidance of bloom without overcuring is of utmost importance. Dry heat cures are extremely difficult to control, and rarely if ever is a heat ideally uniform. The free sulphur test insures against bloom because it enables us to retreat at once material that otherwise might subsequently show bloom after reaching the customer.

It is frequently impossible or impracticable to run more than one heat a day of high quality calendered goods because of the long time required for the dry heat cure. In many cases the goods are left hanging in the heater over night to be removed next morning. If the free sulphur can be known early that morning, it can be decided at once whether the material should be withdrawn from the oven or be given additional heat. This condition, which formerly meant either a delay in production if the goods waited for the sulphur test till the middle of the afternoon, or taking a chance that there would be no bloom if the material was removed in the morning, led us to develop a method for making a quick test.

In this sort of dry heat work samples are taken in the afternoon from goods in those points in the heater known to be regularly weak in temperature and therefore most likely to contain enough free sulphur to cause bloom later. The sample is extracted as usual in the Underwriters' apparatus over night, thus really taking none of our working time. In the morning the total extract is transferred (with solvent) to the fusion cup of the Parr sulphur bomb and evaporated to dryness at 95 to 100 degrees C. When cool, the bomb is charged and exploded in the usual manner for determining sulphur with the Parr bomb. From this point the sulphur can be determined gravimetrically or with the Parr photometer. Both methods are very accurate, though the latter is somewhat faster. In this way one can get an accurate result on free sulphur in less than an hour from the time the acetone extraction is stopped.

This method applied as above allows the usual 2-g. sample, because an acetone extract of from 2 to 8 per cent will be approximately the proper amount of material to treat in the bomb. Results obtained by this method agree to the second decimal with those on the same samples determined by the bromine or nitric acid oxidation methods. The saving in time is considerable at a point where it is especially valuable.

[1]Technical Superintendent, Plymouth Rubber Co., Inc., Canton, Massachusetts.

CHLORIDE OF RUBBER

Duroprene

Duroprene, the new halogen derivative of polyprene obtained by the exhaustive chlorination of natural rubber, is characterized by the remarkable stability it exhibits towards alkalies, acids, nitrous fumes and corrosive agents. Rubber itself is easily attacked with comparative ease by such agents on account of its unsaturated nature. The new derivative is, however, not only fully saturated by the addition of chlorine, but is still further stabilized by the substitution of chlorine for hydrogen.

Duroprene in the solid state is a grayish-white amorphous powder that can be masticated, calendered like rubber, or molded, with or without the addition of filling material, into any desired shape by the combined action of gentle heat and pressure.

It is soluble in benzol, coal-tar naphthas, carbon tetrachloride, and trichlorethylene, giving a pale-yellow solution.

Duroprene Varnish

Ordinary duroprene varnish consists of an approximately 10 per cent solution of duroprene in a mixture of benzol and solvent naphtha. This concentration gives a fairly viscous, quick-drying varnish. It is applied with a brush, leaving a colorless, transparent, lustrous film on drying. Five to seven days at ordinary temperatures are required to harden the film and expel all the solvent. The rate of hardening may be hastened by storing at about 70 degrees C. for about two hours.

Another application of duroprene varnish in connection with paper is as insulation of very high order. It has proved to be the best varnish for cementing the joints of chemical pottery. The cement of the cemented joint is superior to that of the pottery itself and the joints will not fracture under a strain sufficient to break the pottery.

Chemical Resistance of Varnish

Thin films of duroprene varnish have been immersed in various corrosive liquids such as caustic alkalies, ammonia and the mineral acids. These films had a thickness corresponding to a surface area of 130 square feet per pound, but no apparent decomposition or action could be detected.

Duroprene Paints

For the production of resistant paints any dry pigment may be ground in with duroprene varnish. A useful aluminum paint may be made by mixing four ounces of the powdered metal with one gallon of varnish, no grinding being necessary. Very serviceable paints may also be made by mixing duroprene with linseed oil and pigments. The varnish may be applied successfully over dry and well hardened oil paints to prolong their life.

Duroprene may be applied to paper without previous sizing, to preserve the colors and exclude moisture.

Relative to the impermeability of a duroprene film to gases, tests have shown that rubber itself is ten times more permeable to hydrogen than is duroprene.

ALBALITH

Albalith is a brilliantly white, light-resisting lithopone. It was introduced to the paint and rubber industries in the summer of 1920. Since that time the manufacturer has made a third increase in the production of albalith to meet the demand among the consumers of lithopone.

REPLETE WITH INFORMATION FOR RUBBER MANUFACTURERS—H. C. Pearson's "Crude Rubber and Compounding Ingredients," also "Rubber Machinery."

Recently Published Articles Relating to Rubber

The Cold Vulcanization of Rubber[1]

By E. Kindscher[2]

A GENERAL but fairly comprehensive article dealing historically with the theory and practice of cold vulcanization, including its principal applications.

[1] Chemical Abstracts.
[2] Chemiker-Zeitung, 45, 189-191, 1921.

Properties of Raw Rubber[1]

By K. Asano

Carbon dioxide, hydrogen, nitrogen, and oxygen have no appreciable effect on rubber films at temperatures up to 70 degrees C. in the dark, and up to the same temperature the depolymerizing effect of heat, as judged by the viscosity of solutions of the rubber, is but slight. Oxidizing gases tend to cause a reduction in the viscosity, while carbon dioxide tends to check depolymerization and the development of tackiness. Light causes concurrent polymerization and depolymerization, the polymerized rubber being insoluble. Copper induces tackiness by depolymerization without oxidation.

[1] Chemische Zentralblatt, 1922, 93, II, 530.

Determination of Acetone-Soluble Substance in Rubber and Rubber Goods[1]

By J. Lagerquist

Independent estimations of the acetone-soluble material in rubber frequently show considerable discrepancies. Lower results are obtained if the extract is dried under the ordinary pressure and at 90 to 105 degrees C. than under reduced pressure at 50 degrees C. In the former case it is almost impossible to obtain concordant figures.

[1] Chemisches Zentralblatt, 1922, 93, II. 269.

Determining the Molecular Magnitude of Caoutchouc by Chemical Method[1]

By C. Harries and F. Evers

The conclusion is drawn that the molecule of caoutchouc itself contains 35 or 40 atoms of carbon, preferably the latter number, the structural formula then including eight nuclei joined together in a 32-atom ring.

[1] Wissenshaftliche Veröffentlichungen aus dem Seimens Konzern, 1921, 1, 87-95. Chemisches Zentralblatt, 1921, 92, III, 1358-1359.

Elongation at a Constant Load as a Measure of the State of Cure of Rubber

By H. P. Stevens[1]

The graphs obtained on plotting the elongation at a definite load against the period or the coefficient of vulcanization for the same rubber are almost straight lines for smoked sheet, but appreciable curvature is evident in the case of pale crêpe. This difference may be due to the presence of a small proportion of accelerator in the crêpe, the smoke sufficing to inhibit the action of the necessary micro-organisms in the smoked sheet. The "slope" decreases with increasing degree of vulcanization but not proportionately, the rate of change becoming greater with progressive vulcanization.

[1] Bulletin Rubber Growers' Association, 1921, 3, 246-248, 397-399.

Undercured Smoked Sheet Rubber[1]

By R. O. Bishop

Opacity is not necessarily characteristic of undercured smoked sheet, in the sense of smoked sheet with an unusually high content of internal moisture. Although moist rubbers appear to be more liable to mold development, this is probably because the substances which promote mold growth tend to increase the moisture content. The presence of moisture in smoked sheet rubber causes no apparent effect on its subsequent vulcanizing properties.

[1] Agricultural Bulletin F. M. S., 1921, 9, 79-85.

Methods for the Analysis of Rubber Goods

Recommended by the Committee on Methods of Analysis of the Rubber Division of the American Chemical Society[1]

At the meeting of the American Chemical Society held in Rochester, N. Y., 1921, a committee was appointed to draw up a standard procedure for the analysis of rubber goods. This committee suggests a tentative procedure. It has been published[2] so that all chemists may have an opportunity to make their criticisms. Any criticisms should be sent to the chairman of the committee as soon as possible, for it is desired to present the procedure in its final form for adoption at the fall meeting in Pittsburgh.

[1] S. Collier, chairman, Bureau of Standards, Washington, D. C.
[2] The Journal of Industrial and Engineering Chemistry, June, 1922, pages 560-564.

Action of Concentrated Sulphuric Acid on Natural and Artificial Rubber[1]

By F. Kirchhof

The action of concentrated sulphuric acid on rubber in organic solvents is chiefly chemical, whereby the hydrocarbons undergo a change in composition as well as a change in structure. This change is accompanied by a change in physical properties (elasticity, plasticity, solubility, specific gravity). The spatial spiral-8-ring was found the most probable structure—for Pará caoutchouc the two or three open spiral-8-ring, for African caoutchouc a closed spiral-8-ring. Gutta percha seems to take a position between these two.

[1] Kolloid-Zeitschrift.

The Need of Dynamometer Testing for the Valuation and Rational Use of Manufactured Rubber Goods[1]

By Pen Hoarn

A review of published data on the physical properties and testing of rubber including those of the Institute of Delft, Whitby, Eaton, C. O. Weber, Alexrod, Spence and Ward, and others. The results are summarized as follows as to effect on vulcanized properties: (1) washing; (2) kneading; (3) time of cure; (4) temperature of cure; (5) percentage of sulphur; also (6) maximum strength; (7) mechanical properties; (8) tensile

[1] Le Caoutchouc et la Gutta-Percha, January 15, 1921, pages 10683-10689.

product; (9) inorganic additions; (10) relation between coefficient of vulcanization and tensile; (11) aging of vulcanized rubber.

The Structure and Synthesis of the Caoutchouc Molecule[1]

By S. C. J. Oliver[2]

The literature is reviewed at length, accompanied by many references.

[1] Chemical Abstracts.
[2] Chemisch Weekblad.

Supposed Retarding Effect on Vulcanization[1]

By P. L. Bean

Vulcanization of a mixture of rubber 89.9 per cent, sulphur 10 per cent, and dimethylamine dimethyl dithiocarbamate gave no confirmation of the statement by Tuttle that the last-named under these conditions retards vulcanization; a slight acceleration was observable.

[1] The India Rubber Journal, 1922, 63, 354.

Chemical Patents

The United States

TREATING FIBROUS MATERIALS. Rubber latex is introduced into material such as thread, fabric, etc., the water eliminated from the material prior to vulcanization, a layer of rubber containing a vulcanizing ingredient applied, and the combined material vulcanized.—Ernest Hopkinson, New York, N. Y. United States Patent No. 1,411,786.

INSULATION COMPOSITION. Fused quartz and rubber.—Robert R. Williams, Roselle, New Jersey, assignor to Western Electric Co., New York. United States patent No. 1,415,076.

COMPOSITION FOR SHOE DRESSING. Equal parts of beef tallow, pine tar and rubber with neat's-foot oil.—Peter Thoreson, Baldi, Washington. United States patent No. 1,415,208.

RUBBER-LIKE SUBSTANCES. Polymerizing hydrocarbons of the butadiene series at normal temperatures by employing pressures of 50 to 600 atmospheres in the presence of a diluent.—Hermann Plauson, Hamburg, Germany. United States patent No. 1,415,468.

WATERPROOFING COMPOSITION. By weight, 40 parts of raw linseed oil, one part of rubber, one and one-third parts of sugar of lead, and sufficient gasoline to thin for the purpose intended.—Gustaf W. Magnus, Seattle, Washington. United States patent No. 1,416,852.

VULCANIZING RUBBER. Combining rubber with a vulcanizing agent and the reaction product of an aldehyde comprising an open chain having a plurality of carbon atoms, and an amine, and vulcanizing the rubber.—Sidney M. Cadwell, New York, assignor to The Naugatuck Chemical Co., a Connecticut corporation. United States patent No. 1,417,970.

RUBBER VULCANIZATION. Accelerating vulcanization by adding to the mixture an anhydrous compound resulting from the interaction of strong alkali with the nuclear monohydroxy derivatives of benzene in which the hydrogen of the hydroxyl group is replaced by the radical.—Benjamin D. Porritt, assignor to The North British Rubber Co., Limited, both of Edinburgh, Scotland. United States patent No. 1,418,166.

The United Kingdom

PROOFING FABRICS. A gel of vulcanized rubber is employed in waterproofing fabrics, paper, leather, etc.—S. J. Peachey, 5 Yew Tree Road, Davenport, near Stockport, England. British patent No. 177,566; addition to No. 129,826.

PLASTIC COMPOSITIONS. Fibrous material treated with cementing materials such as phenolic resin is disintegrated or cemented and the product mixed with rubber fillers, pigments, etc., or with fireproofing materials. The composition may be sheeted or molded into shape and vulcanized.—H. Frood, Sovereign Mills, Chapel-en-le-Frith, Derbyshire, England. British patents, No. 176,404 and 176,405.

VULCANIZING RUBBER. At ordinary temperatures the preferred metals are zinc and mercury, at higher temperatures zinc, mercury, lead, cadmium, copper, arsenic, and manganese. Bases and amines accelerate the action of these substances. In an example zinc-butyl xanthogenate is named.—S. M. Cadwell, 200 Ames avenue, Leonia, New Jersey. British patent No. 177,493. (Not yet accepted.)

TREATING INDIA RUBBER. A decoction of Roman camomile in rectified castor oil is used for impregnating rubber articles to improve or restore lost elasticity.—E. Hug, 1 rue Edouard, Charton, Paris. British patent No. 177,495. (Not yet accepted.)

The Dominion of Canada

PUNCTURE COMPOSITION. It consists of water, lac sulphur, tragacanth, asbestos fiber, formaline, citronella, dyola scarlet, and salt.—Morris Goldenson, Ottawa, Canada. Canadian patent No. 218,126.

RUBBER VULCANIZATION. Heating unvulcanized rubber, a vulcanizing agent and an accelerator to vulcanizing temperature in a solvent so that a spreadable vulcanized composition can be obtained.—Henry P. Stevens, London S. E. 1, England. Canadian patent No. 218,207.

RUBBER FABRIC. Treating rubber coated fabrics with powdered mica by printing thereon a mixture of it suspended in rubber, resin or oil thickening.—Louis Minton, Manchester, England. Canadian patent No. 218,824.

SPONGE RUBBER. A process of manufacture of a spongy rubber material which comprises mixing together 15 pounds pure rubber; 15 pounds reclaimed rubber; 13 pounds sulphur; 9 pounds zinc oxide, and 1½ pounds carbonate of magnesia, and vulcanizing the mass for one hour at 40 pounds of steam pressure.—The Standard Rubber Works Proprietary, Ltd., Melbourne, Australia, assignee of Anders J. Ostberg and Albert Kenny, both of Richmond, Victoria, Australia. Canadian patent No. 218,964.

Germany

Patents Issued, with Dates of Issue

ACCELERATOR OF VULCANIZATION. Calcined magnesia is mixed with aqueous caustic alkali and the mixture finely powdered, the caustic alkali intensifying the action of the magnesia.—W. Esch. German patent No. 344,061, November 12, 1919.

IMPROVING VULCANIZED MATERIALS. To the material to be vulcanized there are added an alipathic or aromatic amino-compound (that is, diethylanaline), the sulphate of a similar base (that is, aniline sulphate), and a metallic oxide or peroxide or other compound capable of yielding oxygen at the vulcanizing temperature.—Farbenfabriken formerly F. Bayer & Co. German patent No. 345,160, February 20, 1917.

254,344 (January 23, 1920). Method for converting natural or artificial rubbers into other rubbers or into gütta percha-like masses. Siemens & Halske, Acktiengesellschaft, Siemenstadt, near Berlin.

354,539 (December 6, 1919). Method of making plastic masses when solid or semi-solid tar or mineral tar acid is used, or the like. Plausons Forschungsinstitut, G. m. b. H., Hamburg.

355,768 (July 6, 1917). Method for reclaiming rubber and fabric from old rubber. Fritz Waitz, Obernstrasse 78-80, Bremen.

356,165 (June 6, 1914). Method of making colored factice. Dubois & Kaufmann, Chemische Fabrik, Rheinau, near Mannheim.

American Accelerator Practice

The Use and Advantages of Popular Accelerators in Increasing Output and Improving Product

By Lothar E. Weber, Ph.D.

At the meeting of the Institution of Rubber Industry, London, May 12, 1922, Dr. Lothar E. Weber, of Boston, Massachusetts, delivered a very interesting lecture on the use of accelerators in American rubber manufacturing practice, discussing the qualities necessary in a good accelerator and treating in detail those in common use:

Prior to 1916 the number of manufacturers using organic accelerators was small, but today there is scarcely a concern of standing in the rubber industry that does not use them.

One is impressed by the large number of substances which are mentioned in the literature on the subject and are characterized as being accelerators available for factory procedure. As matter of fact, there are relatively few accelerators which have found practical application because other properties are necessary than merely that the substance in question shall accelerate the vulcanization process.

Qualities of a Good Accelerator

The essential qualities of a good accelerator are: (1) low critical temperature; (2) no discoloring effect on goods; (3) no poisonous effect on operators; and (4) low price.

Importance of Low Critical Temperature in Large Scale Mixing

The critical temperature of the accelerator, that is to say, the temperature at which the substance begins to exert its accelerating action, must not be too low. By that is meant in the vicinity of 220 degrees F., as otherwise premature vulcanization will take place during the mixing and calendering operations. This applies particularly to large scale mixing operations. It is not unusual for a factory to employ 84-inch mixing mills with a batch of 400 pounds. Friction calenders frequently run at 35 or 40 yards a minute, so that the heat generated in these operations is more than sufficient to start premature vulcanization unless the critical temperature of the accelerator is relatively high.

Premature vulcanization is usually known as scorching. One might think the more active the accelerator the lower its critical temperature, but such is not the case. Many of the most active accelerators have relatively high critical temperatures, and this makes them very desirable. On the other hand, thiocarbanilide, a relatively weak accelerator, has a low critical temperature, and has come into disfavor because of its scorching tendency.

Discolorizing Effect

An accelerator must not discolor the vulcanized stock either immediately on vulcanization or subsequently. Aniline formaldehyde, a very desirable accelerator in some respects, is somewhat an offender in this respect. White goods on vulcanization are apt to develop a disagreeable yellow color in a week or two. Paranitroso dimethylaniline is not favored for the same reason.

Poisonous Effect of Various Accelerators

A great deal of trouble has been caused in the United States from accelerator poisoning. The accelerators behave in various ways from the standpoint of their toxicity. Aniline affects not only local portions of the skin, but causes a breakdown of the blood cells. The use of aniline today in the United States is small. The few concerns that still use it are able to do so because they provide for very thorough ventilation. The stocks in which aniline is used are apt to be such as do not require much milling, that is to say, stocks in which the amount of aniline vaporized is very small.

Other forms of poisoning are pronounced dermatitis or skin irritation. Hexamethylene tetramine is a real offender in this respect. In one instance where hexa had to be thrown out on account of the irritation which it caused, the rash still appeared months after the hexa had been eliminated. It was finally traced to the liners which had been used and still held enough hexa to cause skin irritation to the workman susceptible to it.

Some other accelerators are not poisonous but they do evolve irritating gases. Such an accelerator is aniline formaldehyde, which gives off formaldehyde, and the fumes are most disagreeable.

Price Factor

A fourth factor in determining the desirability of an accelerator is its price, meaning the price per active unit.

If these four conditions are applied the list of practical accelerators will be narrowed down to relatively few substances which will meet them all.

Use of Accelerators in Molded Goods

The application of accelerators varies considerably with the process by which the goods are made. Accelerators work to best advantage in molded goods. It is a fairly conservative statement to say that 95 per cent of American molded goods contain accelerators. Certain accelerators are also used in steam cured goods but with caution. It is much easier to overvulcanize in the presence of accelerators in steam cured than in molded goods. Water-soluble accelerators such as hexa, unless protected by thorough wrapping, are subject to removal in the cure. In the dry heat cure accelerators are not used, owing to the poisonous effect of litharge necessarily present.

Commonly Used Accelerators

Aniline

The parent accelerator used today is aniline. Formerly used extensively in the United States, its use today is small. Aniline not only exerts an accelerating action but also a pronounced solvent action on the rubber which probably in part explains why it has no little tendency to scorch. It is used to the extent of 1 to 2 per cent on the content of rubber in the stock and it is desirable but not imperative to have zinc oxide present.

Thiocarbanilide

Thiocarbanilide is the accelerator used by the largest number of concerns, despite its disagreeable tendency to scorching, especially in warm weather when mixing rolls are hard to keep cool, and in the case of compounds containing a high percentage of mineral fillers. Thiocarbanilide retains its popularity despite this drawback. The customary amount to use is about 2 per cent on the rubber present. Zinc oxide should be used to increase its activity. In very quick curing compounds 3 or even 4 per cent is used, though from the standpoint of good aging the amount should be not much in excess of 2 per cent.

Hexamethylene Tetramine

Hexamethylene tetramine closely follows thiocarbanilide in popularity. Were it not for its poisoning tendency hexa would be an extremely desirable accelerator. Its price per active unit is quite low. It can be obtained in large quantities and of reasonable purity. About 1½ per cent is the desirable upper limit. Increasing the amount of hexa does not necessarily proportionately in-

crease the speed of the cure. In the case of hexa it is preferable to have zinc oxide present, though not entirely necessary.

Aniline Formaldehyde

Aniline formaldehyde is an accelerator increasing in popularity. It is relatively cheap, can be produced in large quantities, is active, and is relatively free from scorching and any toxic action other than slight irritation owing to the fumes evolved. If the workman is at all careful he need not suffer from the fumes of aniline formaldehyde. It is a very desirable accelerator. The amount to be used is from 1½ to 2 per cent on the rubber present, and zinc oxide is desirable.

Aldehyde Ammonia

Aldehyde ammonia is much more active than aniline formaldehyde, hexa, or thiocarbanilide. It is too active and liable to scorch. One per cent based on the rubber present would represent the upper desirable limit for aldehyde ammonia.

Guanidine Derivatives

During the last two years guanidine derivatives have come into favor, notably diphenylguanidine and triphenylguanidine. The former is the more active of these but both are desirable accelerators. Neither scorches, discolors, or is poisonous. They are obtainable at a reasonable price per active unit, and on that basis are probably but little more expensive than thiocarbanilide. They are coming into increasing favor as desirable accelerators. The diphenylguanidine should be used in amounts not exceeding ¾ of one per cent based on the rubber present. The triphenyl is not quite so active and 1¼ or 1½ per cent is safe.

Sodium and Lead Oleates

Sodium and lead oleate are now little used. They are desirable because cheap and non-poisonous. Oleic acid can be classified as the original organic accelerator, accidentally discovered as such in the laboratory of C. O. Weber, the author's father, in Boston, Massachusetts, in 1904.

Markedly Poisonous Accelerators

Paranitroso dimethyl aniline is open to the objection of being markedly poisonous. Paraphenylene diamine at one time had a few friends but its use in the rubber industry is an outrage owing to its frightfully poisonous nature.

Advantages of Using Accelerators

Accelerators have been chiefly used in molded goods because factory output is determined by the length of cure. Fortunately accelerators are of most advantage in this particular class of work where added equipment is expensive and sometimes cannot be installed. Doubtless the savings effected in this respect are largely responsible for the rapid advance in the use of accelerators in the United States.

For example, the output of a tire factory is partially limited by its milling and calendering capacity, but chiefly by its molding and curing capacity. Cutting the cure in half essentially increases the output by one-third. With this increase comes, obviously, decrease in overhead expense.

Another advantage in the use of accelerators is decreased tendency to overcuring. In the presence of an accelerator, notably hexa and the guanidines, an increase in the conditions of cure which would ordinarily result in an overcure does not result that way. The accelerator when used in proper amounts makes the compound less susceptible to overvulcanization.

A properly vulcanized accelerator compound ages better than a properly vulcanized compound without an accelerator. The great danger in using an accelerator is overcure. With an accelerator one should always work upward from a condition of undercure. From this state the cure should then be raised until what is regarded as a good cure is obtained. By following the reaction in this manner the danger of overcure is small. One should take special precautions to preclude the possibility of overvulcanization.

Accelerated Aging Test

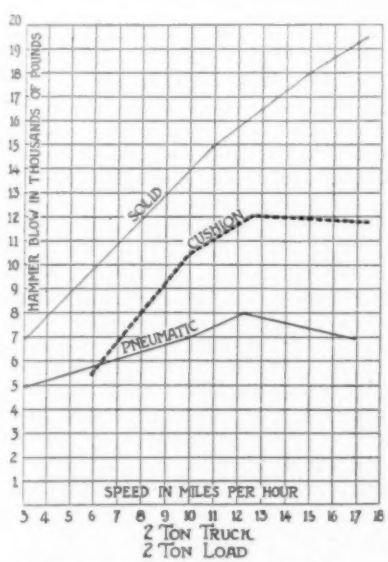
Doctor Weber heartily commended the accelerated aging test when the results are interpreted with judgment. One should always age, simultaneously with the sample under examination, a stock of essentially similar composition, the aging qualities of which are accurately known. If operated in this manner, with precautions to insure a reasonable flow of new air into the aging oven, results of great value are obtained.

Reclaimed Rubber

Reclaimed rubber is not very susceptible to the action of accelerators. In the case of compounds containing reclaimed rubber, the acceleration observed is doubtless due to the action of the accelerator on the crude rubber rather than on the reclaimed. Reliable statistics show that in normal times for every pound of crude rubber used in the industry 0.7-pound of reclaimed rubber is consumed. The rubber scrap available to the reclaimer in the United States is very well adapted for reclaiming and a thoroughly high grade reclaimed rubber is obtained. The American compounder regards reclaimed rubber, not as a filler, but as fulfilling a definite function in the compound, and obtains by its use results not obtainable in any other way.

The Cushion Tire—A Shock Absorber[1]

The proposed Uniform Motor Vehicle Law considers only two types of truck tires, the pneumatic dependent upon confined air and the solid tire not dependent upon confined air for the support of its load. Thus the law entirely ignores one of the most important classifications of truck tires, namely, the cushion tire.



Comparative Test of Cushion Tires

Tests conducted by the Bureau of Public Roads indicate that a properly designed cushion tire possesses a shock-absorbing ability more nearly approaching that of the pneumatic than that of the solid. A peculiarity of a cushion tire is that its impact on rough roads does not increase in proportion to increased speed as is the case with the solid, and may even be less destructive at 18 than at 15 miles per hour.

Road damage by chains used on solids and smooth pneumatics is also ignored by the law. By virtue of its displacement space a cushion tire possesses a remarkable nonskid ability which obviates the necessity for the use of chains except in the most unusual conditions of winter operation.

The chart shown herewith indicates the comparative destructiveness of solid, pneumatic, and cushion tires used on a fully loaded 2-ton truck. The middle line represents the field in which the largest opportunities for usefulness lie, which has been ignored by many state legislatures in the provisions of the Motor Vehicle Law.

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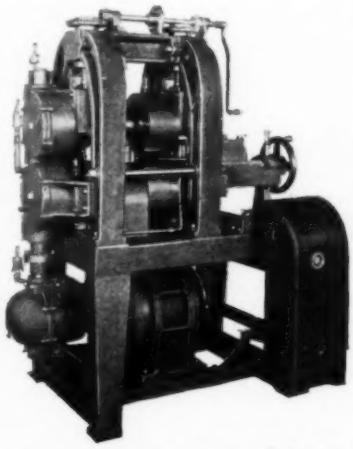
[1] H. W. Slauson, M.E., in The Commercial Car Journal, March 15, 1922.

New Machines and Appliances

Improved Brake Lining Calender

THE brake lining calender here pictured is of special design and construction. It will calender brake lining of any required thickness and widths from 2½ to 6 inches, both sides and edges at the same time at the rate of 150 feet per minute.



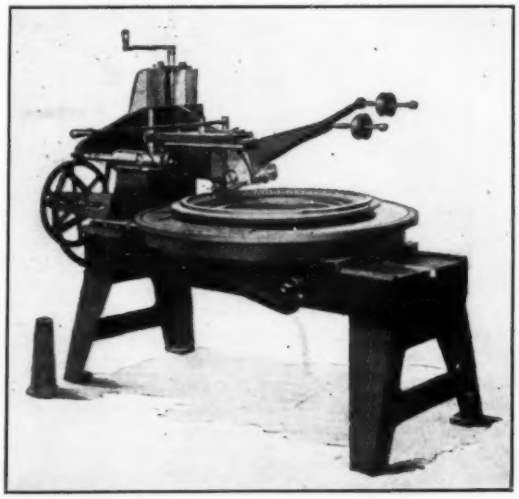
Black Rock Brake Lining Calender

The top, bottom and lefthand rolls are power-driven. The righthand roll operates between the top and bottom rolls, regulating the width and thickness of the lining. The motor is connected by bevel gears to a vertical right and lefthand worm shaft. This engages the right and left worm wheels attached to the ends of the top and bottom roll shafts.

Adjustment of the 2½-inch top roll is by moving the worm wheel and shaft up or down upon the worm, keeping perfect mesh at all times regardless of position required. This adjustment is by bevel gears and screws. The side adjustment of the righthand roll is obtained by mounting it on a slide controlled by a screw and graduated hand-wheel.—Black Rock Manufacturing Co., Bridgeport, Connecticut.

Tire Mold Engraving Machine

A very effective machine for cutting nonskid designs in tire molds is represented in illustration. The mechanism is mounted on a



Breitenstein Nonskid Engraving Machine

substantial bed plate with sturdy legs, and comprises a turn-table operated by gearing, and a support carrying a sliding head or spindle holder. The table is self-indexed, insuring accuracy in spacing, and rotates on steel balls.

In operation, the handwheel at the left controls the rotation of the table and also the movement of the jig or cam shaft. The horizontal lever swings the head or spindle holder. The latter is of the combination swivel type and can be used for both radius and angle cutting. The lever also moves a slide which holds the follower pin in the design cut in the jig or cam shaft.

The machine will cut any design that is practical to cut in sizes ranging from 28 by 3 to 44 by 10; any radius from 1¼ to 8 inches, inclusive, and any angle.—The Summit Mold & Machine Co., Akron, Ohio.

Dipped Goods Equipment

For the rapid handling of small forms for dipped goods such as gloves, nipples, toy balloons, etc., a double dip machine of the kind here shown is very advantageous.

The machine is rigidly framed of angle irons braced, counter-braced, and welded together, forming a substantial support for the cement tank and the dipping mechanism. The latter comprises a pivoted table made of a welded frame of angles having both sides

Double Dip Machine

covered with heavy galvanized sheet metal and hung in an angle-iron frame. A locking device holds the table securely either side up. The vertical movement for dipping comprises a simple combination of machine-cut gears and cold rolled shafting, operated by a hand crank. The solution tank is provided with covers to control the evaporation of the solvent.

This equipment is built to specifications in every required size. The machine pictured will produce from ten to twelve gross of articles a day, provided the dipping room is well ventilated. Other and special machines are built to special requirements.—The J. C. Heifner Manufacturing Co., Ashland, Ohio.

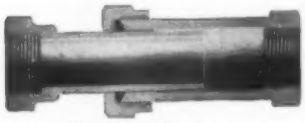
Cutting Electric Power Costs

The use of electric power is an acknowledged necessity in the rubber industry, as indeed in all other industries. It is said that, during the last seven years, the number of motors in this country has increased from 343,000 to over 766,000 in industrial plants alone. The rebuilding of motors is also becoming a specialty, and it is estimated that of more than 1,200,000 electric motors now

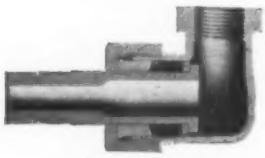
in use in the United States, over 400,000 have been completely rebuilt. Comparative tests made in industrial plants show that a properly reconstructed motor gives service equivalent to a new motor of the same type and capacity. This is due to the fact that all wearing parts are replaceable and when put in proper position make it virtually a new motor.—The Fuerst-Friedman Co., 1253 West Third street, Cleveland, Ohio.

Flexible Joints for Vulcanizing Presses

Tire bead and mechanical goods presses require flexible joints in their piping installations. The use of hose for this purpose has been superseded by some form of metal swing joint. Approved forms of swing, swivel and expansion joints for this purpose are here pictured. They have been used in some of the largest American rubber plants for a number of years. They are of brass, accurately machined and made steam tight with approved packing,



Expansion Joint



Swivel Elbow

Swivel Coupling

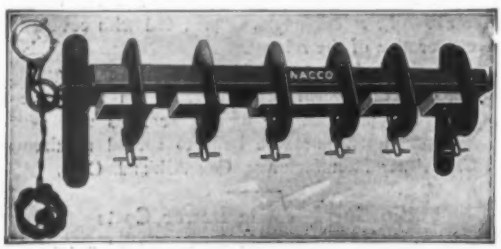
and come in stock sizes and forms or as special fittings to meet every requirement of piping.

The expansion joint is used on steam lines to take care of the expansion, and on the mill line to compensate mill roll adjustments. It is made in standard expansion length or with six inches travel.—The Bridgewater Machine Co., Akron, Ohio.

Tube Repair Vulcanizer

The illustration pictures the "Nacco" automatic electric steam vulcanizer for inner tube and other repairing work. None of the advantages of the old-style tube plates are sacrificed and no steam boiler is needed. The plate is constructed of a single piece of steel boiler tube with ⅝-inch machined steel ends welded in. The electric heating unit is of special design, consisting of a copper tube so applied in the plate that it is immersed in water. The heating element extends the full length of the vulcanizer, insuring even heating from end to end.

The apparatus is under automatic control by means of the gage which is set and sealed at the factory to shut off the cement at 50 pounds steam pressure. To prevent accidents a fusible



"Nacco" Automatic Electric Tube Vulcanizer

plug is inserted in the steam cavity, designed to melt at the temperature of 100 pounds of steam and vent the entire contents of the vulcanizer.—Newson Automatic Controller Co., 5812 Easton avenue, St. Louis, Missouri.

A New Recording Thermometer

A new recording thermometer for charting the temperatures of vulcanization and other processes where heat is employed is shown in the illustration. The instrument embodies some special structural features which insure accuracy and durability. They are built to cover any desired range up to 1,000 degrees F. For the greater part of this range and a majority of industrial applications the pressure of saturated vapor is employed as the actuating medium which produces the deflection of the pen over the chart.

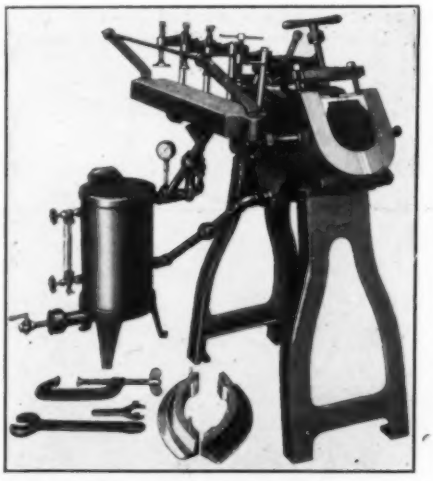
American Recorder

These recorders are adapted for recording temperatures up to 200 feet from location of sensitive bulb, and are not affected by temperature changes along the connecting tubing. — American Steam Gauge & Valve Co., Boston, Massachusetts.

Single Cavity Tire Repair Vulcanizer

A single cavity passenger tire mold which can be perfectly adjusted to fit all sizes of tires is shown in the illustration.

This is accomplished by having the cavity in separate halves and held together by quickly adjusted bolts. The cavity can be widened



Western Tire Repair Mold

or narrowed to any size by the use of spacers between the molds to form the larger sizes, and reducing shells for the smaller sizes.

This equipment is designed for the man just starting in business who cannot make the investment for a complete tire repair outfit, or for the garage where repair work is done on only a limited number of cars.

It effects a saving not only on the original cost of equipment but on space and fuel as well, and being adjustable, all sizes of cord and fabric tires can be perfectly fitted.

Moreover being adjustable laterally as well as perpendicularly, the insertion and removal of the tires from the mold is easily accomplished.—The Western Rubber Mold Co., 321 North Crawford avenue, Chicago, Illinois.

Sanding Machine for Molded Goods

A compact motor-driven disk sander is a most convenient tool in the rubber factory repair shop or finishing room where squaring, beveling or facing various small molded articles or valves must be done with accuracy. The illustration shows such a tool which can be operated from a lamp socket. The table is adjustable from 45 degrees down to 25 degrees up by the hand-wheel shown, a graduated scale and an index being provided to show the exact angle of inclination.

Portable Disk Sander

The disk is a steel plate 15 inches in diameter and is mounted on a disk shaft hub. It is removable for renewing sandpaper. The speed of the disk is 1,725 r.p.m. The disk head is a one-piece iron casting, containing the disk, disk shaft, ball-bearing end thrust and exhaust fan and system, forming one complete unit.

The machine is equipped with a combination gage to enable circular, segment and duplicating work to be done. This gage consists of a plate with a hinged strip pivoted to the bottom, which rides in a slot on the table. The plate has a series of holes to take center pins for circular work and the fence part of the angle gage for duplicating work. There is also a stop gage and segment pin for segment sanding which is operated by a handle cast to the plate. An adjusting screw acts as a stop or set for amount of cut to be taken.—Oliver Machinery Co., Grand Rapids, Michigan.

Machinery Patents

Rubber Scrap and Fiber Separator

The apparatus shown herewith is designed for separating fiber from cured rubber scrap by the dry method.

The rubber scrap containing fiber is fed by hand from a bench A into the hopper of a rotary shredding machine B provided with radial arms cooperating with a series of transverse knives which tear the material apart.

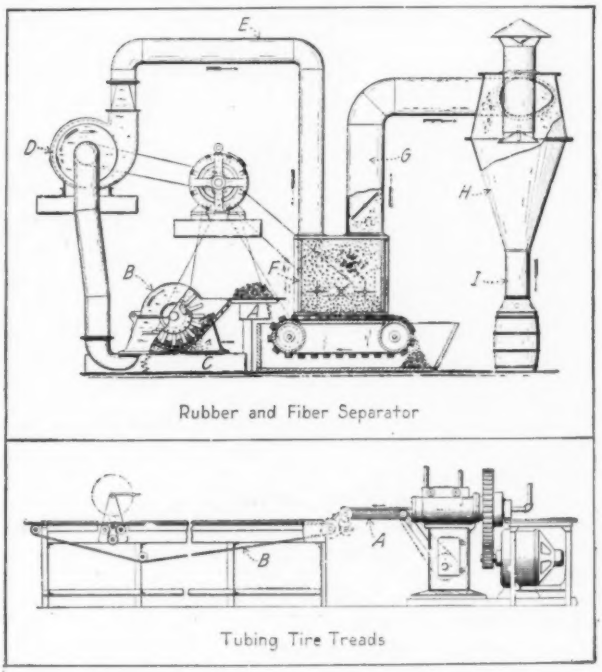
The shredded material passes through the grating into a receiving chamber C and is discharged through an outlet pipe leading to a fan blower D. From the blower a delivery pipe E leads into a separating chamber F, in the lower part of which is a series of rotary paddles or agitators to assist in liberating the loose fiber. In the floor of chamber F is an opening and directly under it is an endless belt conveyor for discharging the rubber lumps which fall to the bottom of the chamber.

A discharge pipe G leads from the top of chamber F to a so-called cyclone separator H which allows the air current to escape above and the fiber to fall by gravity to the discharge pipe I.—Charles W. Kohler and Harry A. Hoffman, Akron, and Walter B. Freeman, of Cuyahoga Falls, both in Ohio, assignors to The B. F. Goodrich Co., New York, N. Y. United States patent No. 1,401,795.

Extruding Tire Treads

In the manufacture of rubber stocks, such as tire treads, by the extrusion method a shrinkage takes place in the strip when it attains its final "set," due either to cooling or to the relieving of the stresses which are placed in the tread upon being forced out of the die. This tendency for shrinkage may be overcome by placing the tread strip under a certain degree of compression while it issues from the tube machine and is still warm.

The means by which this is done is shown in the illustration and comprises a tubing machine with a short conveying apron A upon which the stock issues from the die. At the end of apron A is apron B geared to the former at a slower speed. As the stock passes the interval between A and B it is subjected to a fixed and definite degree of compression due to the reduced speed of B. Upon the cooling or setting of the stock whatever shrinkage occurs will be drawn from the compression within the stock itself. As a result it is possible to cut the stock immediately to the lengths desired.—William H. Bines, assignor to the Firestone Tire & Rubber Co., both of Akron, Ohio. United States patent No. 1,400,137.



Separating Rubber and Fiber—Tubing Tire Treads

Other Machinery Patents

The United States

1,415,082 Vulcanizing press. E. E. Allen, assignor to Allen Machine Co., both of Erie, Pa.

1,415,312 Continuous fabric feed for calenders. M. Castricum, Springfield, assignor to The Fisk Rubber Co., Chicopee Falls—both in Mass.

1,415,557 Tire mold. R. Heller, Brooklyn, N. Y., assignor to Stanley Tire & Rubber Corporation of Delaware.

1,415,688 Overhead conveyor. M. H. Pade, assignor to the Firestone Tire & Rubber Co.—both of Akron, O.

1,415,696 Grommet winding machine. R. C. Pierce, Tallmadge, O., assignor to The B. F. Goodrich Co., New York, N. Y.

1,415,709 Apparatus for unwrapping inner tubes. L. C. Riblett, assignor to the Firestone Tire & Rubber Co.—both of Akron, O.

1,415,724 Tire building apparatus. C. M. Sloman, Detroit, Mich.

1,415,755 Tire core. E. Wright, Dayton, O.

1,415,842 Apparatus for building solid tires. R. W. Snyder, assignor to The Goodyear Tire & Rubber Co.—both of Akron, O.

1,415,865 Pneumatic truck tire changing device. G. C. Brown, Waco, Tex.

1,415,929 Apparatus and method for continuous vulcanizing. O. Grosvenor, Akron, O.

1,416,094 Tire setting machine. T. Krauska, assignor to Alastic Tire Cushion Co.—both of St. Louis, Mo.

1,416,362 Mold for pneumatic tires. H. M. Lambert, Portland, Ore., assignor to Lambert Tire & Rubber Co., Akron, O.

1,416,649 Inner tube tester. E. Knott, Los Angeles, Calif.

1,417,180 Apparatus and method for manufacturing tires. W. Kline, assignor to The Kline Engineering Co.—both of Chillicothe, O.

1,417,509 Vulcanizing mold for tire casings. J. R. Gammeter, Akron, O., assignor to The B. F. Goodrich Co., New York, N. Y.

1,417,551 Vulcanizing equipment. T. Midgley, Hampden, assignor to The Fisk Rubber Co., Chicopee Falls—both in Mass.

1,417,627 Machine for trimming tire casings. E. D. Putt, assignor to Firestone Tire & Rubber Co.—both of Akron, O.

1,417,701 Apparatus for making pneumatic tires. E. H. Trump, Sebring, assignor of ½ to J. M. Alderfer, Akron—both in Ohio.

1,417,739 Apparatus and method for manufacturing tires. E. Hopkinson, New York, N. Y.

Reissues

15,349 Apparatus for making strand fabric. W. Jameson, Springfield, assignor to The Fisk Rubber Co., Chicopee Falls—both in Mass. (Original No. 1,327,826, dated January 13, 1920.)

The Dominion of Canada

218,251 Ball trimming lathe. The B. F. Goodrich Co., New York City, assignee of E. L. Schick, Akron, Ohio—both in U. S. A.

219,022 Repair vulcanizer. W. Fishbaugh, Newark, Ohio, U. S. A.

The United Kingdom

176,808 Machine for cutting and delivering coated duck in sections. Spadone Machine Co., 126 Duane street, New York City, assignee of J. Wegner, 63 Mill street, Astoria, New York—both in U. S. A. (Not yet accepted.)

176,837 Mandrel for molding and branding inner tubes. E. C. R. Marks, 57 Lincoln's Inn Fields, London; Republic Tool & Manufacturing Co., 1401 West 9th street, Cleveland, Ohio, U. S. A. (Refers also to Specification No. 9295/96.)

176,934 Clamp for vulcanizer. L. Smith, 44 Upper Marylebone street, and J. T. Barkwith, 37 Barclay Road, Walham Green—both in London.

177,006 Mold for solid tires. St. Helen's Cable & Rubber Co., Limited, and F. J. S. Gray, Warrington, Lancashire.

177,083 Machine for trimming overflow fin from molded articles such as golf balls. A. E. White, 88 Chancery Lane, London; The B. F. Goodrich Co., 1780 Broadway, New York City, U. S. A. (Not yet accepted.)

177,262 Apparatus for smoking latex. H. A. Wickham and Roa, Limited, 9 Fenchurch avenue, London.

New Zealand

47,485 Tire repair vulcanizer. R. Edwards, Herschell street, Napier, N. Z.

47,486 Inner tube repair vulcanizer. R. Edwards, Herschell street, Napier, N. Z.

47,487 Tire mandrel. R. Edwards, Herschell street, Napier, N. Z.

Germany

Patents Issued, with Dates of Issue

354,549 (October 27, 1921). Autoclave. Continental Caoutchouc-und-Gutta-Percha-Compagnie, Hanover.

354,612 (May 20, 1921). Device for pneumatic tires or treads. Luigi Giorgio Pauer, Vienna; represented by C. Fehlert, G. Loubier, F. Harmsen and E. Meissner, Berlin, S. W. 61.

354,803 (September 30, 1919). Vulcanizing apparatus. Wilhelm Pietsch, Pankstrasse 2, Berlin.

355,271 (July 21, 1921). Kettle press for vulcanizing tires. Hermann Berstorff, Maschinenbauanstalt G. m. b. H., Hanover.

355,767 (January 22, 1920). Vulcanizing mold for rubber shoes. Dirk Frans Wilhelmi, Doorwerth, Holland; represented by Dr. E. Moldenhauer, Düsseldorf.

356,193 (June 28, 1921). Comb-cutting machine. Firma Fritz Claussner, Nuremburg.

Design Patents Issued, with Dates of Issue

812,486 (September 5, 1921). Tire vulcanizing apparatus. Richard Pinckert, Dammweg 11, Erfurt.

813,925 (April 3, 1922). Device for attaching rubber heels to shoes. Marie Hentzschel, née Gerlach, Kaufferstrasse 13, Dresden.

814,541 (March 20, 1920). Vulcanizing apparatus. Harvey Frost & Co., Ltd., London; represented by H. Licht, Berlin S. W. 11.

814,665 (August 6, 1921). Clamp on hand-presses for vulcanizing rubber tubes. Arnold Max Brée, Südwestkorso 15, Berlin. Friedenau.

814,666 (August 6, 1921). Press-ram for tube repair vulcanizers. Arnold Max Brée, Südwestkorso 15, Berlin.

815,247 (April 20, 1922). Electro-heating apparatus for vulcanizing kettles. Robert Blümel, Fuldstrasse 55-56, Neukölln.

815,391 (October 26, 1921). Autoclave. Continental-Caoutchouc-und-Gutta-Percha-Compagnie, Hanover.

Process Patents

The United States

1,415,437 Manufacture of tennis balls and other hollow articles. W. A. Gibbons, New York, N. Y., assignor to Revere Rubber Co., a Rhode Island corporation.

1,415,438 Covering tennis balls. W. A. Gibbons, New York, N. Y., assignor to Revere Rubber Co., a Rhode Island corporation.

1,415,804 Insulating storage battery plates with hard rubber rings, etc. W. H. Crissey, Reading, Pa.

1,416,064 Manufacture of artificial leather. R. B. Respess, New York, N. Y., assignor by mesne assignments to Respro Inc, Cranston, R. I.

The United Kingdom

177,064 Automatically closing inner tube punctures. H. B. Ivydene, Bassingbourn, Cambridgeshire.

177,298 Securing detachable undercut rubber studs to boots and shoes. A. V. Roe, High Firs, Bursledon, Hampshire.

Germany

Patents Issued, with Dates of Issue

354,425 (December 1, 1917). Method for making flat-pressed packing rings. Karl Froebus, Moltkestrasse, Cologne-on-the-Rhine.

354,548 (March 13, 1921). Attaching cushion tires with solid rubber cushions. Demetrio Maggiora, Florence, Italy; represented by C. Fehlert, G. Loubier, F. Harmsen and E. Meissner, Berlin, S. W. 61.

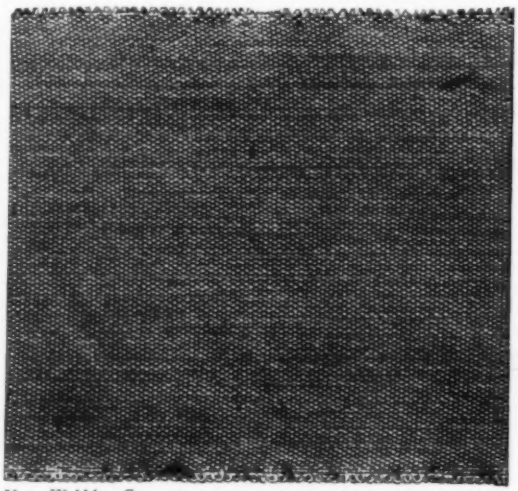
354,511 (March 27, 1920). Method of vulcanizing rubber. Wilbur B. Burke, Cleveland, United States; represented by E. Lamberts, Berlin, S. W. 61.

355,909 (July 10, 1920). Method of making pneumatic tires. Ernest Hopkinson, New York, United States; represented by R. H. Korn, Berlin, S. W. 11.

Tape for Wrapping Open Cured Goods

In the manufacture of open steam cured rubber goods, such as inner tubes, duck ply hose, tires, and wrapped goods generally, it is customary to apply to them a few plies of sheeting held in place by a tight spiral wrapping. Hitherto the usual practice has been to prepare these cross wrappers from heavy sheeting by removal of the selvages and tearing the goods into narrow strips. This method is wasteful of time and material and produces wrapping that lacks strength and is short lived in service. When applied direct to a rubber surface the impression of the raveled edges of the strips detracts from the finish of the goods.

The lack of economy experienced with home-made cross wrapping is eliminated by the use of loop edge tapes which have been



Hope Webbing Co.

Loop Edge Wrapping Tape

developed by webbing makers especially for the manufacturers of inner tubes.

For this purpose tapes measuring 2¾ and 3 inches are generally used. The weave is that employed in webbing and is designed for strength. The filler threads form the small loops on the edges and serve to give a neat finish to the fabric. The filler being unbroken by reason of the loop construction, the strength of the tape is not impaired and the durability is much greater than that of the torn strips of sheeting.

The advantages of finish and economy by the use of loop edge tape as demonstrated in inner tube manufacture should appeal equally to manufacturers of duck hose and wrapped goods generally, to whom the cost of wrappers has always been an important item.

Activities of The Rubber Association of America

Removal of Rubber Association Offices

THE Rubber Association of America has moved its offices to 250 West 57th street, on the tenth floor of the Fisk Building, 57th and Broadway, New York, N. Y. The space which will be occupied measures 2,000 square feet and includes a large conference room, the offices of A. L. Viles, manager of the association, and other executives; as well as the general offices for the various departments.

Association Meetings

The Arbitration Committee met on June 6, to elect its chairman, the term of office of the former chairman, Horace DeLisser, having expired in January, 1922. S. G. Carkhuff, secretary, Firestone Tire & Rubber Co., was elected chairman.

The Crude Rubber Committee met at the Yale Club on June 6, to give attention to the standardization work in connection with crude rubber rules and regulations concerning deliveries, qualities, etc. The committee discussed the feasibility of securing regular and frequent information through government or other channels concerning exports of crude rubber from the Far East.

The regular monthly meeting of the Foreign Trade Division was held in Boston so that members could participate in the June meeting of the Boston Export Round Table, at the Boston City Club on June 7. The discussion was devoted to the plan to establish the standard tire warranty in foreign markets, at least so far as the practices of our manufacturers are concerned, and very satisfactory progress was made.

There was a dinner meeting of rubber heel manufacturers held at The Raleigh, Washington, D. C., on June 7, for the purpose of discussing the practicability of organizing a rubber heel and sole division, and the compilation of statistics concerning the production, sales and inventory of rubber heels. Approximately thirty companies were represented. A conference was held with the Bureau of Standards the same day and simplification and standardization plans of the bureau with respect to rubber heels were discussed.

The Rubber Proofers' Division met at the Copley-Plaza, Boston, on June 8, and matters of a routine nature were given attention.

On June 13 the Executive Committee of the Mechanical Rubber Goods Division held its regular quarterly meeting at the Yale Club. The meeting was well attended and substantial progress was made on matters which have been under consideration by the division.

The temporarily organized committee of Service Managers met in Cleveland, June 14, in order to prepare a tentative poster and a pamphlet illustrating and explaining the common abuses to which tires are subjected. Substantial progress was made in drafting the poster and another meeting is to be held soon to complete the work.

The regular June meeting of the Executive Committee, Tire Manufacturers Division, was held at the Yale Club, June 21, in the morning, and in the afternoon of the same day the regular quarterly meeting of the Tire Division was held. Progress was made on several matters of real importance to the industry.

On June 27 the Accounting Committee of the association met to give further attention to several matters which have been the basis for most of the committee's activity on the subject of cost accounting.

The regular June monthly meeting of the Board of Directors was held at the Lotos Club on June 29, and business of a routine character was transacted.

The Traffic Committee held its regular June meeting at Akron in the board room of The Goodyear Tire & Rubber Co. on June 20-21. The principal subject was the adoption of a plan for cooperation by traffic managers of rubber manufacturers in attempting to secure a revision of the ocean rates on rubber products to ports in the United Kingdom. Arrangements were made also for the presentation of a request to the railroad classification committee for a reduction in the carload rating of crude rubber, a hearing upon which will be held by the railroads' committee in Atlantic City in July. The Traffic Committee members were guests of the Goodyear company at lunch.

Appoint Committee of Service Managers

There has been felt a need for a permanent committee of service managers representing members of the Tire Manufacturers' Division, to meet occasionally and discuss problems common to the service departments of tire companies, particularly those in connection with the establishment of the standard tire warranty and its ramifications. On June 21, the Tire Executive Committee voted to establish a permanent committee of service man-

Report of Inventory—Production—Domestic Shipments of Pneumatic Casings—Inner Tubes—Solid Tires, Etc.

	Pneumatic Casings				Inner Tubes				Solid Tires			
Month	No. Mfrs. Reporting	Inventory	Production	Shipments	No. Mfrs. Reporting	Inventory	Production	Shipments	No. Mfrs. Reporting	Inventory	Production	Shipments
May, 1921	59	4,451,668	2,100,917	2,085,882	57	4,751,880	2,210,040	2,342,567	12	264,663	35,156	40,122
June, 1921	63	4,154,456	2,313,265	2,643,850	60	3,835,098	2,359,928	3,232,673	11	240,336	28,395	49,867
July, 1921	63	3,892,037	2,570,524	2,757,581	61	3,122,815	3,020,981	3,603,248	11	220,003	35,123	55,678
August, 1921	66	3,934,853	3,043,187	2,894,442	64	3,649,319	4,430,152	3,804,060	11	216,367	55,694	66,866
September, 1921	63	3,340,798	1,929,268	2,047,929	62	3,827,830	3,274,822	2,645,758	11	161,832	37,441	50,276
October, 1921	64	3,545,030	1,928,271	1,675,169	64	4,732,016	2,843,918	2,016,371	10	163,299	46,274	45,911
November, 1921	64	3,908,342	1,756,555	1,342,519	63	5,203,568	2,126,211	1,540,299	10	173,451	43,537	34,556
December, 1921	64	3,696,519	1,839,738	1,980,264	64	4,731,021	2,070,098	2,522,710	10	168,515	40,478	39,520
January, 1922	66	4,174,216	2,055,134	1,596,806	66	5,246,647	2,343,393	1,889,724	11	181,769	40,224	33,294
February, 1922	66	4,691,329	2,084,308	1,562,365	65	6,141,956	2,596,774	1,702,583	11	183,448	39,492	36,805
March, 1922	63	5,183,286	2,645,790	2,073,963	63	6,991,118	3,017,511	2,090,737	11	182,197	49,433	48,350
April, 1922	65	5,464,336	2,401,187	2,086,651	65	7,230,096	2,650,573	2,329,343	11	173,748	46,664	52,309

Compiled by The Rubber Association of America, Inc.

"Production" and "Shipment" figures cover the entire month for which each report is made. "Inventory" is reported as of the last day of each month.

"Inventory" includes tires and tubes constituting domestic stock in factory and in transit to, or at, warehouses, branches (if any), or in possession of dealers on consignment basis, and as a total represents all tires and tubes still owned by manufacturers as a domestic stock.

"Shipments" includes only stock forwarded to a *purchaser* and does not include stock forwarded to a warehouse, branch, or on a consignment basis, or abroad.

agers, which at the outset will be constituted of representatives from the following named companies, with the understanding that the committee membership will be increased as desirable:

Ajax Rubber Co., Inc., Firestone Tire & Rubber Co., The Fisk Rubber Co., The General Tire & Rubber Co., The B. F. Goodrich Co., The Goodyear Tire & Rubber Co., Hood Rubber Co., Kelly-Springfield Tire Co., The Miller Rubber Co., Norwalk Tire & Rubber Co., Pennsylvania Rubber Co., United States Tire Co.

MICHELIN ANNOUNCES WINNER IN PRIZE CONTEST

The winner in the $1,000 prize contest for naming the Michelin Tire Man, as instituted by the Michelin Tire Co., Milltown, New Jersey, has been announced as being L. J. Keller, Kendallville, Indiana. His suggestion for a name was: "Old 1895," with the slogan: "Full of Life and Quality." The winning name is appropriate because Michelin introduced his pneumatic tire in 1895.

Rubber Trade Inquiries

The inquiries that follow have already been answered; nevertheless they are of interest not only in showing the needs of the trade, but because of the possibility that additional information may be furnished by those who read them. The Editor is therefore glad to have those interested communicate with him.

(1) Request is made for addresses of manufacturers of rubber straps for men's belts.

(2) A correspondent desires the addresses of manufacturers of dipped goods, all over the country but particularly in New England.

(3) A manufacturer inquires for the addresses of makers of steel washers used in rubber heels.

(4) Inquiry is made for the address of a competent and experienced rubber chemist.

(5) Factory superintendent desires information concerning machine for forming sheeted stock into tubes for making elastic bands.

(6) An inquiry for soap tree bark has been received.

(7) A reader desires a tire section cutting machine to cut wire and clincher beads.

(8) A request has been received for the addresses of dealers in montan wax.

(9) Inquiry is made for the address of the United States agent of the Plausen colloidal mill described in THE INDIA RUBBER WORLD, May 1, 1922.

(10) A correspondent desires addresses of concerns making golf ball molds and molds for coverings of golf balls; also information concerning the recovering of golf balls.

(11) The addresses of manufacturers of hard rubber earcaps for telephones and radio apparatus are requested.

(12) A manufacturer desires the address of a source of supply for "Accelerene," chemically known as paranitroso dimethylaniline.

(13) A reader desires to obtain Lambert cut sheet rubber.

(14) Information is desired concerning a powder used for sprinkling on old tires, said to soften the rubber so that it can be rubbed off after an hour, facilitating the removal of the tread.

(15) The addresses of manufacturers of spraying outfits are requested.

(16) A manufacturer desires to obtain the addresses of concerns making filling machines for handling stiff rubber putty.

(17) Inquiry is made for the addresses of manufacturers of machines for surfacing printers' blankets.

(18) A request has been received for the address of the manufacturer or sales agent of the plastometer for testing rubber.

(19) A manufacturer abroad desires the addresses of American manufacturers of holland for wrapping compound.

(20) An inquiry has been received for the addresses of manufacturers of vacuum drying apparatus suitable for laboratory use.

Foreign Trade Opportunities

Addresses and information concerning the inquiries listed below will be supplied to our readers through the Foreign Trade Bureau of The India Rubber World, 25 West 45th street, New York, N. Y. Request for each address should be on a separate sheet and state number.

(2141) Importing company, Straits Settlements, desires to represent manufacturers of rubber shoes, canvas shoes with white rubber soles, raincoats, cotton ducks, white poplin canvas for shoemaking, aniline dyes, etc. Quote c. i. f. Singapore harbor, with samples.

(2176) Supply company, Germany, desires to buy Louisiana sulphur. Quote c. i. f. German or f. o. b. American port.

(2182) Mercantile firm, France, desires agency for rubber and chemical products. Quote c. i. f. French port.

(2189) Firm in France desires agency for mica and asbestos in sheets, etc. Quote c. i. f. French port, in French.

(2210) Merchant, Natal, South Africa, desires agency for manufactured asbestos goods. Quote c. i. f. South African port.

(2213) Merchant, Spain, desires to buy cables, belting and packing, rubber goods, and naval stores. Quote, c. i. f. Spanish port, in Spanish, with catalogs.

(2259) Commission firm, Syria, desires to buy compounding ingredients and agency for benzine and rubber. Quote in French, c. i. f. Beirut and Haifa. Cash against documents at Damascus.

(2261) Canadian manufacturer desires to buy artificial leather for automobile top material and materials and supplies for jobbers in automobile top repair trade. Quote f. o. b. shipping point.

(2266) Italian firm desires to buy white lithopone packed in bags. Quote c. i. f. Italian port. Cash against documents on arrival of goods.

(2275) Italian merchant desires to buy canvas tennis shoes and small football shoes. Payment through bank on receipt of goods. Correspond in Italian.

(2283) Commercial agent, South Africa, desires to represent in the Transvaal manufacturers of moderate priced belting for market on the Rand and of cheap motor tire.

(2296) South African firm desires to buy tires, factory firsts. Quote c. i. f. Durban or f. o. b. vessel, New York.

(2300) Belgian firm desires manufacturer's agency for automobile windshield cleaner.

(2347) Italian merchants desire agencies for automobile and truck tires.

(2353) Italian dealers in optical goods desire an agency and to buy fountain pens. Cash or bank credit.

(2422) Italian merchant desires agency and to buy pneumatic tires and accessories. Quote in Italian or French, c. i. f. Italian port.

(2472) Italian firm desires agency on commission for chemicals and raw materials for the textile and rubber industries.

(2508) Italian merchant desires agency for chemical products.

(2512) Mercantile firm, Spain, desires to buy rubber belting. Quote in Spanish, c. i. f. Corunna.

(2537) Wholesale dealers, Italy, desire an agency and to buy boxing gloves, rubber soled shoes of canvas and leather, tennis balls, round footballs, and punching bags. Quote in Italian or French, c. i. f. Italian port. Cash against documents through Italian bank.

(2547) Spanish city fire department desires to buy hose and safety appliances. Quote in Spanish, c. i. f. Spanish port.

(2548) South African company desires agency and to buy tires, accessories, and mechanical rubber goods. Quote c. i. f. Durban or f. o. b. vessel, New York. Payment against documents.

(2573) Owner of garage and machine shop, Spain, desires agency and to buy industrial machinery, automobiles, motor trucks, and accessories. Quote c. i. f. Corunna or Vigo. Correspondence in Spanish.

New Goods and Specialties

New "Camco" Footwear

THE "Princess Mary" is one of the late additions to the "Camco" line of outing oxfords. Made of white or ecru duck with black or brown full or cut out rubber apron, this turn model has a white fiber suction sole and heel of special design and is lined.

The latest addition to the "Camco" line is a fine duck slipper, the "Princess Pat," with leather saddle and strap and silvered buckle. It has a kid sock lining, turn rubber sole, and molded heel attached to sole.—Cambridge Rubber Co., Cambridge, Massachusetts.

"Princess Mary" Oxford

Practice Golf Balls and Two-Faced Doll

To lessen the handicap of beginners and other golf players who must count the cost of balls and time required to reach distant courses, there are now being made two very good cheap practice balls of tough solid rubber, with dimpled markings and durable white elastic paint coating. The "Wearever" practice golf ball illustrated is intended to retail at 20 cents and the "Fast Flight," stamped "F. F. P. W.," at 10 cents each. The manufacturer plans to improve these balls if the demand justifies.

"Wearever" Practice Golf Ball

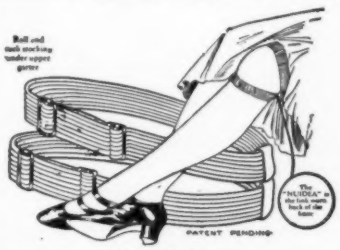
Patents on the molds, processes, and formulas for the manufacture of these balls have been applied for and are pending in the United States and foreign countries.

The "Pat-Biddy Duo Toy" is a patented, two-sided, molded rubber doll, made 4 and 5 inches high in any of three combinations—Pat on one side and Biddy on the other, Pat on both sides, or Biddy on both. These dolls are made in red or in combined colors, in two different finishes. Biddy and Pat are also made up in red sponge rubber in a 5-inch size called "Sponge Toys."—The Faultless Rubber Co., Ashland, Ohio.

"Pat-Biddy Duo Toy"

Round Garter with Two Bands Hinged Together

The "Nuidea" garter combines two bands of elastic of different sizes, fastened together at the back with a hinge. For street and dress wear it is worn with the larger band above the knee, the smaller below, and the hinge at the back. For sport wear, both circlets may be worn below the knee with the stocking rolled and tucked inside the upper one.—Nuidea Garter Co., 808 Penn Building, Pittsburgh, Pennsylvania; sales agent, Lathem Sales Co., 255 Fifth avenue, New York, N. Y.



"Nuidea" Garter

Loud Speaker Reproduces Without Distortion

The new Bristol "Audiophone" loud speaker for receiving radio concerts, etc., requires no batteries. It may be connected to either a 2 or 3-stage amplifier for small or large audiences, and has a transformer mounted in the base. The different parts are insulated with rubber washers. The "Audiophone," the result of six years' research, was originally intended for use in connection with the new Bristol talking moving pictures soon to be offered.—The Bristol Co., Waterbury, Connecticut.

Bristol "Audiophone"

"A" Battery with Rubber Case

Manufacturers of storage batteries having the cases of hard rubber have been quick to adapt their product to the uses of radio. An "A" battery of this type is illustrated here. The Witherbee hard rubber case, in use for other kinds of storage batteries for about seven years, for radio work is equipped with soft rubber foot cushions and hard rubber terminals and vent caps. The plates and separators are thick and of especial design to meet the exacting demands of the acid battery.—Witherbee Storage Battery Co., Inc., 643-645 West 43d street, New York, New York.

Witherbee Radio "A" Battery

De Long's Douche

The "Sanitant" is a form-fitting aluminum douche pan, requiring no holding or undressing. The removable vaginal spray is of hard rubber; the intake and outlet pipes are of ordinary rubber tubing. The removable rubber bulb attaches to any faucet, and prescribed medicaments are placed in a special chamber near the intake tube connection.—American Aluminum-Metal Products Co., 515-518 Security Trust & Savings Bank Building, Hollywood, Los Angeles, California.

Eno Cushioned Weatherstrip for Windshields

The Eno cushioned rubber weatherstrip for all straight type windshields, including those on Fords, replaces the manufacturer's earlier model. When the cushion part of the rubber is pinched, Fig. 1, the jaws open to admit the edge of the lower half of the windshield. In Fig. 2 is shown how to tilt the shield to place the rubber in correct position, while Fig. 3 illustrates the double seal.—George W. Eno Rubber Co., 1026-1032 South Los Angeles street, Los Angeles, California.

Fig. 1

Fig. 2

Fig. 3

"Chatterless" Asbestos Brake Lining

Within the year the manufacturer of "Gold Edge" asbestos brake lining has also put on the market the "Chatterless," unaffected by hot oil. It gives brakes a smooth, flexible action and eliminates chatter.—The Raybestos Co., Bridgeport, Connecticut.

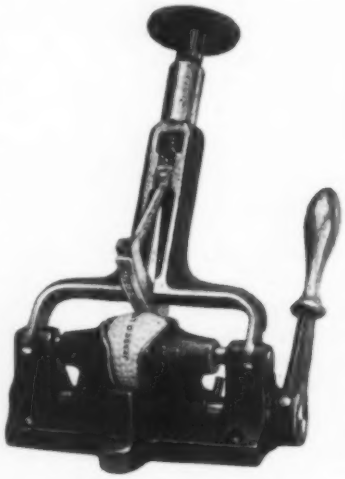
Standard Alined Heel

"Carlton" Heel

The "Carlton" rubber heel is manufactured in a complete line of Cuban, junior and men's sizes. These sizes and the number of nailholes correspond with the requirements of the United Shoe Machinery Co.'s template for attaching rubber heels.—Bloomingdale Rubber Co., Butler, New Jersey, and 501 Fifth avenue, New York, N. Y.; selling agent, J. J. Batterman, 139 Lincoln street, Boston, Massachusetts.

Owner's Name on Golf Balls

The "Fulname" golf ball marker offers an attractive counter device to every dealer in golf goods. By means of interchangeable individual dies, any golf ball may be marked with a player's full name.—The Fulname Co., Union Central Building, Cincinnati, Ohio.



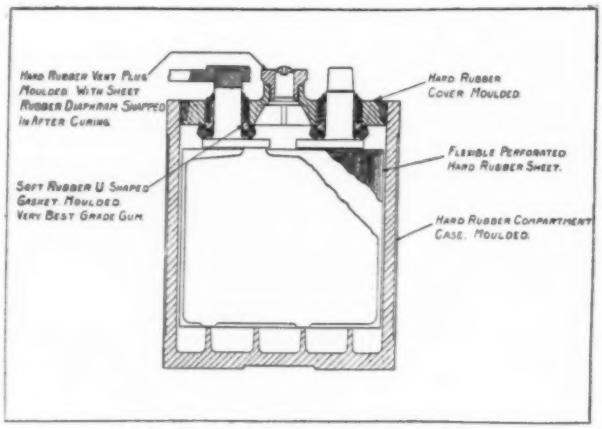
"Fulname" Golf Ball Marker

Fountain Pen Marker

A small machine called the "Namograph" has been devised for engraving names on such articles as fountain pens, pencils, brush handles, cigarette holders, etc., made of hard rubber or hard rubber substitutes. Attachments are now being developed for operating on radio panels. The "Namograph" operates by electricity and the different parts are nickeled or japanned to give it an attractive appearance as counter equipment. Its total weight is 7 pounds.—Modern Inventions Corporation, 1123 Broadway, New York, N. Y.

Rubber in Automotive Storage Batteries

The efficiency of rubber in its various forms has brought about its substitution for wood and metal in many up-to-date storage batteries, even hard rubber instead of steel handles being used on some models. The illustration shows a cross-section of an automotive storage battery produced with the assistance of a number of large rubber manufacturers. Arrows indicate where the different kinds of rubber are used.—Westinghouse Union Battery Co., Swissvale, Pennsylvania.


HARD RUBBER VENT PLUG MOULDED WITH SHEET RUBBER DIAPHRAM SHAPED IN AFTER CURING.
HARD RUBBER COVER MOULDED.
FLEXIBLE PERFORATED HARD RUBBER SHEET.
SOFT RUBBER U SHAPED GASKET MOULDED. VERY BEST GRADE GUM.
HARD RUBBER COMPARTMENT CASE. MOULDED.

Westinghouse Automotive Storage Battery

Russian Influence on Rubber Footwear

At first the flapper wore footwear copied from Douglas Fairbanks' in "The Three Musketeers," but now they openly call it Russian. What goes in leather is bound to be popular in some adaptation of rubber, and the new galoshes are excellent illustrations. The "Pavlowa" galosh is said to have been inspired by girls of Northwestern University. It has a rubber foot, while the top is of waterproof Jersey, and it is lined with wool fleece. A folding gusset vent, concealed under an Astrakhan cuff, fastens with a single snap button. It is intended to be worn over the shoe.—The B. F. Goodrich Co., Akron, Ohio.

"Pavlowa" Galosh

Astrakhan Top Gaiter

Another development of the Astrakhan cuff top gaiter is shorter than the four-buckle galosh and fastens with two buckles, while the Astrakhan cuff has two snap buttons to allow for ankle adjustment. This gaiter is also made of fine quality waterproof Jersey lined with fleece and has the foot of rubber.—Hood Rubber Products Co., Inc., Watertown, Massachusetts.

Culp Adds to Line of Fabric Tires

The fabric tires formerly made by the Sioux City Tire & Manufacturing Co., Sioux City, Iowa, under the "Sioux" and "Sioux City" brands, have been added to the Culp-Plan line. The picture shows the "Sioux" brand nonskid and rib treads. These are oversize, extra quality, made according to Culp specifications. The treads are black and the sidewalls gray, carrying the Culp-Plan trade mark.—George K. Culp, Inc., 56 West 45th street, New York, N. Y.

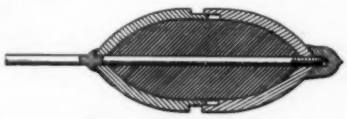
"Sioux Culp-Plan" Rib and Nonskid Treads

"Presto" Jar Rings

The problem of admitting air to tightly sealed fruit jars when opening has been solved. "Presto" jar rings on two sides extend beyond the circle in "ears" which may be pulled. The quality of rubber meets all canning requirements.—Cupples Company, St. Louis, Missouri.

Metal Encased Fuller Ball

An exceedingly durable and effective fuller ball, shown here in cross-section, provides proper closure for the valve and resiliency to compensate for ordinary wear. It is essentially a molded elastic rubber cushion, with compression means, encased in a two-part telescoping casing of noncorrosive metal. Through the long diameter of the ball is a brass rod for attachment to the cam of the faucet spindle, by which the ball is drawn to the valve seat under the elastic cushion of the contained rubber.—David B. Bird, 7351 Coles avenue, Chicago, Illinois. United States patent No. 1,399,459.



Bird's Fuller Ball

Rubber Soled Bathing Sandal

Bathing footwear is apt to follow the lines of style in other shoes and the bathing sandal shown here illustrates this tendency. The upper of this sandal is of white duck trimmed with colored mercerized sateen straps that button at ankle and instep, the latter being continued to the sole of the sandal in saddle effect. The sole is of special lightweight rubber and is particularly desirable for beach wear when not wanted strictly for a bathing shoe.—C. R. Whittredge & Co., 245 Burrill street, Swampscott, Massachusetts.

Whittredge Bathing Sandal

Inflated Baseball

The heavy walled, inflated rubber ball here pictured is of standard baseball size, with molded imitation of the stitched leather covering on standard league balls. The ¼-inch thick wall is of well cured, tough white rubber, to withstand the abusive treatment incident to ball games. This ball's lively, enduring qualities insure it being a favorite with the American boy.—The Miller Rubber Co., Akron, Ohio.

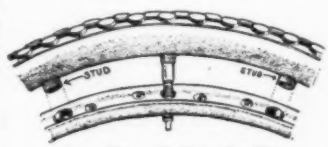
"Miller League" Baseball

Radio Parts of "Paradio"

Dials, knobs, condenser plates, vacuum bulb sockets, etc., made of "Paradio"—a fine quality hard rubber free from mineral matter or impurities, to be had in brilliant black, warm brown, Cuban mahogany, or American walnut finishes; polished, molded or machined to requirements—are inert with respect to Hertz waves and magnetic flux, hygroscopic, and not brittle.—The Seamless Rubber Co., New Haven, Connecticut.

Something New in Bicycle Tires

The "Kant Kreep" bicycle tire is the invention of a bicycle dealer of 30 years' experience. Two lugs are molded on the tire, one each side of the valve, and fit into sockets drilled into the rim by means of a special gage and bit furnished agents. On the bit is a stop which prevents drilling the holes too deep. The tires are shellacked to the rim as usual, the lug holes also being filled with shellac, and the lugs prevent creeping and strain on valve stems. Only one dealer is appointed in a town, to prevent cut prices and assure agents of a profit.—Schnell & Fowler Co., successor to Belmont Cycle Co., 334 Broad street, Newark, New Jersey.



"Kant Kreep" Bicycle Tire

Storage Battery of Glass Jar Type for Radio

The advantage of the storage battery over the dry cell for radio equipment lies in the fact that the storage battery need not be thrown away when discharged, but can be recharged. The Willard Radio "B" battery, pictured here, consists of 12 cells of 2 volts each, giving 2 volts more than usually found in a "B" battery. The rubber thread insulation between the plates is a Willard feature, and soft rubber gaskets surround the posts, making the cells acidproof. Rubber screw caps seal the leakproof glass jars and rubber vent plugs are easily removable. The case is oak, painted acidproof. The same manufacturer makes also a radio "A" 6-volt storage battery, in its "Monobloc" all-rubber one-piece case.—Willard Storage Battery Co., 246 East 131st street, Cleveland, Ohio; 4-6 La Salle street, New York, N. Y.

Willard Radio "B" Battery

The Obituary Record

The Obituary Record

Former President of Ajax Rubber Co., Inc.

WILLIAM G. GRIEB, former president of Ajax Rubber Co., Inc., New York, N. Y., died early last month at his home in Scarsdale, New York, age 64 years.

William G. Grieb

Born in Philadelphia, Pennsylvania, in 1858, he was a graduate of the University of Pennsylvania and of the Wharton Engineering School. He had been engaged in the rubber business in one branch or another since 1881, having then identified himself with the wholesale rubber footwear business conducted in Philadelphia by J. G. Grieb & Sons. By 1887 he had become the senior partner and a rubber factory was acquired in Trenton, New Jersey, for making rubber soles and other specialties the business required. This was incorporated as the Grieb Rubber Co., of which, in 1899, Mr. Grieb was elected president. In 1906, the Ajax Standard Rubber Co. consolidated with the Grieb Rubber Co. under the name of the Ajax-Grieb Rubber Co., and Mr. Grieb accepted the vice-presidency. Subsequently, in 1909, he became president. In 1916, the company requiring additional funds, the Ajax Rubber Co., Inc., was formed and was financed by Wall Street interests, when Mr. Grieb was again made president.

The following year the company acquired the Racine Rubber Co.'s plant at Racine, Wisconsin, and found this step an advantageous one.

Mr. Grieb was a Mason and a member of numerous associations, societies and clubs, and his passing will be noted with regret by his many friends in the rubber trade.

Michelin's Advertising Manager

Rupert B. Bramwell, for over thirteen years advertising manager of the Michelin Tire Co., Milltown, New Jersey, died of pneumonia on May 25, aged 46 years.

Mr. Bramwell was widely known as an advertising man and had been a prominent figure in the automobile and tire industries from their inception. Born in Terre Haute, Indiana, in 1876, he entered the automobile industry in 1900, when he joined the De Dion Bouton Motorette Co. Later he became advertising manager of the Pope Toledo car and also for a time was connected with leading popular and automobile magazines in an advertising capacity. In 1909 he went to the Michelin Tire Co. and ever since has played a prominent part in the upbuilding of that firm's business.

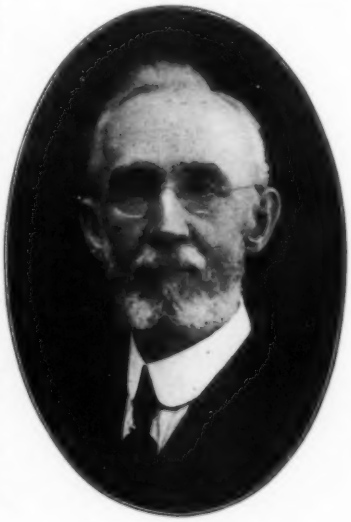
Mr. Bramwell is survived by his widow, a son, and his father, who lives in England.

A Popular Tire Man

Park J. Stair, manager of the tire division of the Los Angeles branch and twelve years in the service of the United States Rubber Co., died while undergoing an operation at a local hospital. He was one of the most popular men in the company's service and spent most of his life in the rubber industry, learning the trade in Akron, where he was born 41 years ago.

Long Cashier of a Boston Rubber Company

Samuel S. Preble, Jr., for more than thirty years cashier of the Boston Woven Hose & Rubber Co., Boston, Massachusetts, died on June 6 at his home in Melrose, after an illness of about six months.



Samuel S. Preble, Jr.

Mr. Preble was born in Marblehead, Massachusetts, sixty-seven years ago and after spending several years in the shoe business in that town, entered the employ of the Boston Woven Hose & Rubber Co. in 1890 as cashier, a position which he held until his death.

The company has sustained a profound loss in the death of Mr. Preble, the news of which was received with deep regret by his associates who knew and appreciated his sterling qualities. His record of more than thirty years of conscientious service with one organization is seldom equalled.

PERMANENT RUBBER COLORS PERFECTED

A series of gritless colors totally unlike the ordinary pigment colors are now available in practically every tint for use in rubber mixings. These colors are a combination of basic dyes combined in lake form with certain pigments. Subsequent chemical treatment causes these colors to withstand the differing rubber curing processes without loss of brilliancy. They are compatible with most accelerators except those made from ammonia bases. The latter tend to dull the color brilliancy. Vulcanization, whether by press heat, open steam, or acid cure, does not impair any of the color effects produced.

Satisfactory results are obtained by the use of one to two per cent of the colors of the total batch weight without raising the volume cost of the mixing.

GUAYULE SELLS AT PREMIUM

The guayule industry was formerly very important in the Torreon district of Mexico, but the Continental-Mexican Rubber Co. is the only one of several large factories erected for guayule production that has operated during the last two or three years. Work at this plant was discontinued April 30 but the season was considered successful as washed and dried guayule rubber here produced is now selling at a premium over plantation rubbers because of certain properties recognized by the trade.

News of the American Rubber Trade

Financial

Westinghouse Earns $5,837,389

THE Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pennsylvania, reports total sales for the fiscal year ended March 31, 1922, amounting to $99,722,026, the largest volume of business handled by this company except during the previous three abnormally active years. Net income, after deducting all charges for Federal taxes and interest, was $5,837,389, or 7.7 per cent on the common stock, compared with 16.87 per cent in the previous year. Dividends paid on common and preferred stock totaled $5,984,895.

The balance sheet shows a profit and loss surplus of $42,324,085 as compared with $42,265,280 at the close of the previous year. Net current assets total $96,752,122 and net current liabilities $11,400,121. Inventories amount to $55,027,059 and unfilled orders to $50,740,696. Demand for the company's regular lines of apparatus is increasing and radio telephony has created a great new manufacturing field.

Hood Rubber Co. Annual Report

According to the balance sheet, as of March 31, 1922, of the Hood Rubber Co. and the Hood Rubber Products Co., Inc., Watertown, Massachusetts, total assets and liabilities amount to $22,304,114 Current assets are $15,880,252, against current liabilities of $4,229,998. The surplus is $461,370. Quarterly dividends of $1.75 per share have been paid regularly on the preferred stock, and of $1 per share on the common stock. Sales for the year 1921 amounted to $23,844,436, agaiunst $32,867,000 for 1920. Sales for the first three months of 1922, however, were $5,767,965, against $4,376,293 for the corresponding period of 1921. The company's total funded debt consists of $6,000,000 in 15-year 7 per cent debenture gold notes.

Dividends Declared

COMPANY	STOCK	RATE	PAYABLE	STOCK OF RECORD
Boston Woven Hose & Rubber Co.	Com.	1½% q.	June 15	June 1
Boston Woven Hose & Rubber Co.	Pfd.	3% s.a.	June 15	June 1
Converse Rubber Shoe Co.	Pfd.	3½% s.a.	June 1	May 15
du Pont, E. I., de Nemours & Co.	Com.	2% q.	June 15	June 5
du Pont, E. I., de Nemours & Co.	Deb.	1½% q.	July 25	July 10
Firestone-Apsley Rubber Co.	Pfd.	3½% s.a.	July 1	June 27
General Electric Co.	Com.	$2.00 q.	July 15	June 7
Goodrich, B. F., Co., The	Pfd.	$1.75 q.	July 1	June 21
Hood Rubber Co.	Com.	$1.00 q.	June 30	June 20
Hood Rubber Products Co., Inc.	Pfd.	$1.75 q.	June 1	May 22
Kelly-Springfield Tire Co.	Pfd.	$1.50 q.	July 1	June 16
New Jersey Zinc Co., The	Com.	2% q.	Aug. 10	July 30
Salmon Falls Manufacturing Co.	Com.	$2.50 q.	June 1	May 24
United Shoe Machinery Corporation	Com.	$0.50 q.	July 5	June 20
United Shoe Machinery Corporation	Pfd.	1½% q.	July 5	June 20
Westinghouse Electric & Manufacturing Co.	Com.	2% q	July 31	June 30
Westinghouse Electric & Manufacturing Co.	Pfd.	2% q.	July 15	June 30

New Incorporations

Aero Rubber Products Corporation, June 7 (New York), $150,000. I. R. Davies; J. P. and I. Todd—all of Yonkers, New York. Principal office, Kingston, New York. To manufacture rubber products.

American Company of Liberia, Limited, May 22 (New York), $500. V. V. Reilly; S. B. Howard; S. C. Wood—all of 65 Cedar street, New York City. To import rubber, tropical products, etc.

Armstrong-Fox Tire Agency, March 20 (California), $10,000. C. R. Burn, secretary, 814 Merchants National Bank Building, Los Angeles, California. Principal office, Los Angeles, California. To deal in tires and automobile accessories.

Atlantic & Pacific Tire Stores Association, May 24 (Delaware), $15,000. B. W. Culver; A. K. Burton; W. C. Maupin. Delaware agent, United States Corporation Co., 19-21 Dover Green, Dover, Delaware. To manufacture tires, tubes, rubber heels, etc.

Atlasta Tire & Rubber Co., June 14 (Delaware), $250,000. M. E. Mettler; P. M. Gilkey—both of Wilmington, Delaware. Delaware agent, F. L. Mettler, 832 Market Street, Wilmington, Delaware. To manufacture tires, tubes, rubber heels, etc.

Bartling Tire Company of Memphis, May 11 (Tennessee), $5,000. E. F. and M. L. Bartling; E. L. Pickerell; L. Smith; R. G. Brown. Principal office, Memphis, Tennessee. To deal in tires and automobile accessories.

Brookland Auto Service Co., June 15 (Delaware), $25,000. J. E. Kauffman, Merchants Bank Building; W. W. Cole and C. J. Bean, 820 Michigan Avenue—all of Washington, D. C. To manufacture tires, tubes, rubber goods.

Chase Manufacturing Co., February 7 (Missouri) $30,000. R. L. Chase, president, Metropolitan Building; C. Willis, vice-president, care of American Linseed Company; S. E. Gwynn, treasurer, 5532 Page Boulevard—all of St. Louis, Missouri. Principal office, 3216 Morgan street, St. Louis, Missouri. To manufacture an electric steam vulcanizer that prevents the burning or overcuring of rubber. (Formerly the Gwynn-Bacon Vulcanizer Co.)

Cravath & Parker, April 3 (Massachusetts), $20,000. A. Cravath, president; A. Parker, treasurer—both of 321 Belmont avenue, Springfield, Massachusetts; C. S. Ballard, clerk, 374 Main street, Springfield, Mass. Principal office, Springfield, Massachusetts. To deal in automobile tires and accessories.

Crescent Rubber Manufacturing & Supply Co., May 11 (Washington) $100,000. T. Maginnis; W. Rutherford; D. P. McKellop. Principal office, Seattle, Washington. To manufacture rubber articles, etc.

Dixon Rubber Co., May 22 (New York), $5,000. G. P. Brauburger, 745 Magie avenue, Elizabeth, New Jersey; H. Rubenoff, 2315 Andrews avenue, E. I. Kleinfeld, 530 West 174 street—both of New York City. To deal in tires, rubber goods, etc.

Eagle Tire Patch Co., April 25 (Missouri), $25,000. G. T. McCall, president; H. E. Zahl, vice-president; L. K. Rosser, secretary and treasurer. Principal office, 102-6 N. William street, Moberly, Missouri. To manufacture rubber cement, tube and casing patch.

Grote, Hugo, Tire Co., April 22 (Texas), $12,000. H. Grote, president; R. H. Feckner, secretary; E. Schmuck, treasurer. Principal office, 223 Avenue C, San Antonio, Texas. To deal in tires.

Kalamazoo Tire & Rubber Co., May 15 (Michigan), $10,000. E. A. Campbell, president; M. B. Coppock, vice-president; L. W. Coppock, secretary and treasurer. Principal office, 412 East Randsom street, Kalamazoo, Michigan. To manufacture cord tires.

Kay Rubber Corporation, May 23 (New York), $4,000. H. Kottler, 1325 47th street; B. Feigembaum, 1648 78th street; M. Schimelman, 2222 Surf avenue—all of Brooklyn, New York. Principal office, Brooklyn, New York. To manufacture rubber merchandise and apparel.

M. & H. Tire Co., March 28 (Alabama), $2,000. M. L. Hussey; E. and T. Morrison; J. F. Schneffe, president and treasurer. Principal office, 309 Bibb street, Montgomery, Alabama. To deal in tires and tubes.

McKone Tire & Rubber Company of New York, June 6 (New York), $5,000. C. W. Reynolds; A. McEvoy—both of 151 West 38th street; I. D. Neustein, 3 West 29th street—all of New York City. To manufacture tires and rubber goods.

Mexia Battery & Tire Co., April 1 (Texas), $100,000. J. W. Prickett, president; M. A. Prickett, secretary; A. E. Prickett, treasurer. Principal office, Mexia, Texas. To deal in tires and "Exide" batteries.

Middletown Tire & Rubber Corporation, May 25 (Delaware), $4,000. C. R. Bishop; A. M. Fox; R. H. Ocheltree—all of Wilmington, Delaware. Delaware agent, Delaware Charter Co., 904 Market street, Wilmington, Delaware. To deal in tires.

Newport & Rosenthal, May 25 (New York), $5,000. R. Newport, 507 West 112th street; J. Rosenthal, Hotel St. George—both of New York City, C. F. Rosenthal, 138 Heyward street, Brooklyn, New York. To manufacture tires.

Palladium Tire Sales Co., Inc., June 13 (New York), $2,000. S. B. and W. W. Lesselbaum; F. Druss—all of 128 Broadway, New York City. To deal in tires.

Racine Horseshoe Tire Corporation, May 18 (Delaware), $4,600,000. G. V. Reilly; S. B. Howard; H. C. Hand—all of 65 Cedar street, New York City. Delaware agent, United States Corporation Company, Dover, Delaware. To manufacture tires, tubes, shields, rubber products, etc.

Richmond Rubber Co., February 3 (Virginia), $50,000. E. R. Patterson, president; H. R. Conner, vice-president and treasurer; W. F. Merchant, secretary. Principal office, 32 North Seventh street, Richmond, Virginia. To manufacture rubber products of all descriptions.

Rubwood, Inc., May 13 (Massachusetts), $800,000. F. M. Andrew, president, 51 Pleasant street; T. E. Andrew, treasurer, 27 Quincy street—both of Methuen, Massachusetts. H. N. Atwood, 45 Elmore street, Boston, Massachusetts. F. K. Broadhurst, Smithfield, North Carolina. Principal office, Lawrence, Massachusetts. To manufacture rubber products.

Sexton Super Tire & Rubber Co., April 25 (Illinois), $1,000. S. H. Silverman, 5056 Sheridan Road; C. S. Peterson, 1450 Lake Shore Drive; C. D. Unger, 862 Leland avenue—all of Chicago, Illinois. To manufacture automobile tires.

Staten Island Truck Tire Co., June 2 (New York), $20,000. W. MacDonald, 125 Palmer avenue, Port Richmond; J. M. Searl, 212 Oakland avenue; E. Bernstein, 143 Westervelt avenue—both of New Brighton, Staten Island. Principal office, Richmond, New York. To deal in truck tires.

Sutherland Co., March 29 (Washington), $65,000. J. T. Gregory; M. A. Langhorne; R. W., G. W., and C. O. Sutherland. Principal office, Tacoma, Washington. To deal in tires, tubes and accessories.

Triplok Rim Corporation, May 20 (Delaware), $500,000. R. K. Thistle; S. C. Wood; A. R. Myers—all of 65 Cedar street, New York City. Delaware agent, United States Corporation Company, Dover, Delaware. To deal in automobile rims.

Tru-Matic Tube Sales Corporation of New Jersey, June 6 (New Jersey), $100,000. I., Dunham, 227 Park avenue, East Orange, New Jersey; H. L. Robinson, 311 Springfield avenue; W. W. Buckley, 17 Central avenue—both of Cranford, New Jersey. Principal office, 232 Miller street, Newark, New Jersey. To manufacture tires and tubes; to buy and sell, trade and deal in products of the Tru-Matic Tube & Tire Manufacturing Co.

Wiggly Rabbit Associated Tire Stores, May 15 (Kentucky), $10,000. T. F. Seay; J. B. and H. N. Lukins. Principal office, Louisville, Kentucky. To manufacture tires and accessories.

The Rubber Trade in the East and South

Manufactured Goods

Manufacturing activity in most lines of rubber goods is encouraging. In mechanical lines business is very good, in automobile topping the mills are running close to 75 per cent of capacity. Production in insulated wire is increasing notably in volume with renewed building activity. The footwear factories are active chiefly on tennis and sport shoes and dull on winter and heavy goods. Heel and sole manufacturing plants are working at profitable capacity.

Tire manufacturers continue operating in good volume and seasonal reduction of output is not yet in evidence. Tire dealers are in a quandary because of the price cutting of manufacturers. While it would seem that the bottom has been reached, the dealers are uncertain on that point and are very cautious in placing orders, fearing future losses before prices are stabilized.

New York

Fuller E. Callaway, chairman of the board of Callaway Mills, Inc., devoted to the production of hose and belting ducks, fire hose, cords and artificial leather fabrics, announces that New York offices of Callaway Mills, Inc., have been opened at 345 Madison avenue. In connection with this office, branches will be maintained at 225 West Adams street, Chicago, and 110 Summer street, Boston.

The Smith Chemical & Color Co., Inc., 257-259 Water street, New York, N. Y., importer, exporter, and manufacturer of chemicals and colors, announces the addition of Joseph C. Keller to its sales forces.

The New York City offices of the Canton Foundry & Machine Co., Canton, Ohio, have been recently removed to 203 East 15th street, and are under the supervision of H. B. Bergere and L. Wechsler. J. R. Payser is secretary of the Canton company.

The Binney & Smith Co., 41 East 42nd street, New York, N. Y., specialist in rubber chemicals and compounding ingredients, has been recently appointed European sales agent for the products of the Rex-Hide Rubber Manufacturing Co., East Brady, Pennsylvania.

A consolidation of the business interests of the firms formerly known as W. S. Hammesfahr and G. Edward Habich has been recently announced. The new organization, under the name of Habich & Hammesfahr, Inc., at 24 Stone street, New York, N. Y., will confine its attention exclusively to brokerage transactions between dealers and importers of crude rubber and kindred products.

R. T. Stokes, formerly superintendent of the rubber factory of Parker Stearns & Co., Brooklyn, New York, is associate editor of *The Journal of Industrial & Engineering Chemistry*.

George B. Campion, former Texas manager, has succeeded Norman E. Oliver as New York branch manager of The B. F. Goodrich Co. Mr. Oliver resigned after 24 years of service with the company.

George E. Goodwin has been appointed general manager of clothing sales, succeeding N. Lincoln Greene, and will have charge of the clothing activities of the United States Rubber Co. Mr. Goodwin is widely known in the trade and especially in the clothing and druggists' sundries lines. In 1905 he was salesman for the Enterprise Rubber Co. in Boston, a subsidiary of the United States Rubber Co., and finally became sales manager. He was put in charge of clothing stocks in all branch stores of the United States Rubber Co. in 1913 and later became supervisor of clothing and druggists' sundries in the branch stores, and in 1920 was appointed manager of branch store sales.

Harry H. Reifenstein has been appointed manager of clothing sales of the branch stores of the United States Rubber Co., succeeding George E. Goodwin. Mr. Reifenstein was with the United States Rubber Co. at Syracuse under the old F. C. Howlett organization and a number of years ago he became clothing manager at the Chicago branch, followed by his promotion to the general clothing offices at Boston.

M. M. Carew and Philip Billhardt constitute a firm of crude rubber brokers which succeeds the concern formerly known as Carew & Sheehan, Inc. The new organization, under the name of Carew & Billhardt, will occupy offices at 61 Whitehall street, New York, N. Y.

The Buffalo Foundry & Machine Co., Buffalo, New York, specializing in vacuum dryer construction, has recently acquired the coppersmithing business, including the copper shop equipment, of the W. A. Case & Son Manufacturing Co., also of Buffalo. The foundry company is therefore in position to furnish all kinds of copper work, including copper distilling apparatus, evaporators, kettles, vacuum pans, coils, etc., and also does a general coppersmithing business in either new work or repairs. C. W. Pearson is sales manager.

The organization formerly known as the Syracuse Steam Generator Co., Syracuse, New York, has been taken over by Syracuse Steam Generator, Inc., but with address for the present unchanged. The company specializes in the manufacture of "long-life" boilers, which have no flues, tubes or coils, and are specially designed for tire repair shops.

Pennsylvania

J. C. McQuiston, of The Westinghouse Electric & Manufacturing Co., East Pittsburg, Pennsylvania, will serve as manager of the Department of Publicity in the newly organized Advertising Managers Council of the Motor and Accessory Manufacturers' Association. The Council will discuss and study the merchandising and publicity problems of the association.

Because of its drastic cut in tire prices, instituted May 15, the Hydro-United Tire Co., Fourth and Hanover streets, Pottstown, Pennsylvania, withdrew, on June 15, its offer of a tube with every tire. During the week of the establishing of the new prices the dealer business is said to have increased 100 per cent. The company's tube list has been reduced approximately 12½ per cent and the tube discount increased 5 per cent. Dealers who receive 30 per cent discount will obtain 30 per cent plus 5 per cent on tubes. Dealers who have not as yet put in a stock sufficient to obtain the above discount can buy at 20-5 per cent on tires and 20-5-5 per cent on tubes.

Having rebuilt, along practically the same lines, its factory recently destroyed by fire, The Keystone Rubber Manufacturing Company of Pennsylvania, Erie, Pennsylvania, is now operating with approximately a full force. Officers of this company are: Joseph G. Moomy, president and treasurer; Harry E. Moomy, vice-president, secretary, and sales manager; and J. H. Moomy, 2nd vice-president.

The Traveler Rubber Co. of Bethlehem, U. S. A., Bethlehem, Pennsylvania, is installing additional equipment, while a new building for storage purposes is being erected. The executive personnel of this company includes: Guy de la Rigaudiere, president; Victor Durand, Jr., 1st vice-president; G. J. P. Raub, 2nd vice-president; and E. E. Pollard, secretary and treasurer.

The Vulcweld Rubber Co., Pottstown, Pennsylvania, manufacturer of supersize tires and tubes, will establish a plant at Limerick, Pennsylvania. The two-story factory building already on the property will be enlarged, other buildings will be added, and new machinery installed. It is believed that this work will be completed by October 1, when it is proposed to begin operations. The plant capacity will be 250 tires and 400 tubes daily. Officers of the company include: Earle W. Smith, president; Philip Sotter, vice-president; N. M. Sechler, secretary and treasurer; A. D. Ludlum, general manager; and Saul Blumberg, sales manager.

Eastern and Southern Notes

G. F. Armstrong, president and treasurer of the Armstrong Rubber Co., Inc., Garfield, New Jersey, who recently purchased the plant at West Haven, Connecticut, formerly owned by The Kelley Tire & Rubber Co., Inc., has formed a new corporation, which will be known as The West Haven Rubber Co. The plant is now in operation and, upon the purchase of additional equipment, 500 tires a day will be produced. Most of these will be sold through George K. Culp, Inc.

At the twenty-second annual convention of the Cotton Manufacturers' Association of Georgia, recently held at Atlanta, T. J. Callaway, secretary and manager of the Milstead Manufacturing Co., Milstead, Georgia, was elected third vice-president. Fuller E. Callaway, the organizer of the Callaway chain of cotton mills, was one of the speakers on this occasion.

The Beckham Tire & Rubber Co., 46 Auburn avenue, Atlanta, Georgia, has been appointed a distributer for the I. J. Cooper Rubber Co., Cincinnati, Ohio, and will handle the Cooper tires and storage batteries, acting as a factory branch, but will continue operating as formerly. F. C. Dabney, previously manager of the now eliminated Atlanta branch of the I. J. Cooper Rubber Co., will be in charge.

Executives of the Virginia-Carolina Rubber Co., Inc., with factory and general offices at Richmond, Virginia, state that they are preparing to build, at a cost of approximately $100,000, the first unit of their factory. Additional units, it is said, will be constructed from time to time. This company, of which R. J. Bell is president, manufactures automobile tire necessities and by-products.

The Electric Hose & Rubber Co., Wilmington, Delaware, has been operating day and night for the past four months and business conditions are most satisfactory. F. C. Anderson is sales manager.

The Rubber Trade in New Jersey

Trenton

Inquiry as to business conditions prevailing in the rubber industry in Trenton reveals the fact that practically every local factory is busy. The mechanical rubber goods manufacturers report a continued and strong demand for seasonable goods such as garden hose, jar rings, belting, suction hose for agricultural purposes, and similar lines. The tire business continues to show a steady and healthy growth and all of the local manufacturers report satisfactory volume. Prices, however, seem to be badly demoralized in the tire line, with no indication of any improvement.

The New Jersey Rubber Manufacturers' Association held its regular meeting June 12. Dinner was served at the Trenton Country Club, the menu and service being up to the high reputation of the club. The following companies were represented: Acme Rubber Manufacturing Co., Ajax Rubber Co., Bergougnan Rubber Corporation, Crescent Insulated Wire & Cable Co., Empire Tire & Rubber Co., Essex Rubber Co., Hamilton Rubber Manufacturing Co., Luzerne Rubber Co., Mercer Rubber Co., Vulcanized Rubber Co., Whitehead Brothers Rubber Co., Howe Rubber Co., and Voorhees Rubber Manufacturing Co. In the absence of the president, Charles E. Stokes, of the Home Rubber Co., Frank D. Voorhees, of the Voorhees Rubber Manufacturing Co., presided. As usual at these meetings, matters pertaining to the general welfare of the members were freely discussed. The interchange of opinions and experiences is of great value to the members and tends to create and foster a strong spirit of mutual confidence and respect.

The Hamilton Rubber Manufacturing Co. recently put in operation one of the largest and latest improved stock calenders, manufactured by William R. Thropp Sons' Co. This calender has all of the improvements designed by the manufacturer and is electrically driven. Several of the improved type of 60-inch mixing mills, also made by the Thropp company, have recently been installed in the same plant.

A goodly number of Trenton rubber men attended the 1922 class reunions of Princeton University on June 17. Among those taking part in the festivities, and needless to say enjoying themselves thoroughly, were: A. Boyd Cornell, Hamilton Rubber Manufacturing Co.; W. H. Sayen, Mercer Rubber Co.; C. Edward Murray, Jr., and J. Cornell Murray, Empire Tire & Rubber Corporation; Bruce Bedford, Luzerne Rubber Co.; R. J. Stokes, Thermoid Rubber Co.; and Horace B. Tobin (cheer leader), Woven Steel Hose & Rubber Co.

The Essex Rubber Co. is working a night shift and turning out several thousands of rubber heels and soles daily.

The Empire Tire & Rubber Corp. is working three shifts on automobile tires and is one of the busiest of the Trenton rubber factories. The company has several large hose orders for the United States Government together with orders for garden hose.

The Murray Rubber Co. was recently organized by General C. Edward Murray, Sr., E. Edward Murray, Jr., and J. Cornell Murray. The latter is secretary and treasurer of the Empire Rubber & Tire Corporation, while C. Edward Murray, Jr., is second vice-president of the same company and has been made general manager of the new company which will manufacture Murray cords at the Empire plant.

The Joseph Stokes Rubber Co. is operating in three shifts, and has several large orders for battery jars and connections. The company, which manufactures hard rubber goods, employs 1,200 hands.

The Spartan Rubber Co. filed articles of incorporation on June 20, with the Secretary of State of New Jersey, to take over the plant of the defunct Zee-Zee Rubber Co., which it expects to operate in the course of a few weeks. The new officers are: Arthur Newman, president; E. D. Newman, vice-president and secretary, and Stanley Newman, treasurer, all of New York City. It is understood the company controls a number of chain stores selling auto tires and auto accessories. It intends to manufacture and market its product under the brand name of "Spartan Armour Tread" tires and "Spartan" tubes. It is expected that about two hundred people will be employed. Karl Kavanaugh, at present connected with the Ajax Rubber Co.'s plant, at Trenton, has been engaged as superintendent of the reorganized factory. It will be recalled that the Zee-Zee plant was disposed of at auction sale on May 26, for $58,000.

John T. Spicer, general sales manager of the Thermoid Rubber Co., is at present on an extended business trip taking in the branch stores and selling connections of the Thermoid Rubber Co.

The Whitehead Bros. Rubber Co., Trenton, New Jersey, is building a two-story brick addition to its plant for the manufacture of hose. The main plant of the Whitehead company, a stone structure, is the oldest rubber plant in Trenton still owned and operated by the same family, and at the same time is one of the oldest industrial structures in the State. During the civil war the factory was busy on knitted woolens for the Union Army. In 1868 the manufacture of woolens was discontinued and the mill converted into a rubber factory. The company has since continued in the manufacture of rubber products and operating thus for fifty-five years has attained a record of over half a century's service. The company is being ably managed by Samuel Cadwallader.

The Trent Rubber Co. has nearly doubled its output during the past few weeks and is now manufacturing 450 tires and 300 tubes daily. The company has plenty of orders on hand.

The Mercer Rubber Co., which began the manufacture of automobile tubes during the war, reports that department very busy, and plenty of work in the mechanical departments.

The rubber reclaiming business is reported to be very poor in Trenton. The Sanhican Rubber Co. has closed its plant at Brookville, while the Nearpara Rubber Co. is running but 50 per cent capacity.

Following allegations of insolvency, Vice-Chancellor Buchanan, of the New Jersey Court of Chancery, has appointed Counselor George Gildea receiver of the Nottingham Rubber Co., Trenton. Counsel for C. Francis Fisk, an incorporator of the Nottingham company, opposed the receivership proceedings. Samuel H. Bell, a Reading, Pennsylvania, druggist, who is president of the rubber concern, declared that the Nottingham company is financially embarrassed. The court has directed Receiver Gildea to wind up its affairs.

The Eastern Rubber Co. has removed from 103-105 to 123 Factory street, Trenton, New Jersey. B. Goldman is president and treasurer, and L. Goldman is vice-president and secretary.

The American Oil & Supply Co., Newark, New Jersey, has recently purchased a warehouse at Trenton for one of its subsidiaries, the E. B. Fulper Branch, where it will carry a full line of supplies for potters and rubbermakers, including paints, oils, acids, chemicals, etc., besides linoleum. F. B. Fulper is vice-president of the subsidiary company.

W. G. Current, formerly assistant superintendent of The Buckeye Rubber Products Co., Willoughby, Ohio, is superintendent of production for The Thermoid Rubber Co., Trenton, New Jersey.

New Jersey Notes

Several of the Trenton rubber manufacturers have become affiliated with the new Safety and Sanitation Council organized by the New Jersey State Department of Labor for the purpose of encouraging better safety, and lessening accidents in industrial plants.

The Ace Rubber Co., Union Hill, New Jersey, has been incorporated to manufacture a full line of air bag, full molded oversize cord tires. It is expected that the company will be in production early in July. E. H. Unkles, formerly superintendent of the Trent Rubber Co., Trenton, New Jersey, is president of the Ace company. Charles A. Wilson, formerly general manager of the export department of the Dural Rubber Co., Flemington, New Jersey, is vice-president. Karl Kueffel is secretary; Carl Lombarlet, treasurer; and W. L. Kueffel, chairman of the board of directors.

A change has been made in the executive personnel of the Smith Rubber & Tire Co., Inc., Garfield, New Jersey. F. B. Lincoln has succeeded Winfield Clearwater as president of the company and E. J. Welch has replaced R. A. Clearwater as secretary-treasurer. C. D. Lee has been added to the board of directors which also includes Lincoln and Welch. The company has been reorganized and placed on an efficient working basis.

Although placed on the market only recently the Eckrode endless rubber extensor flap for clincher rims is now being used by several hundred car owners. The Eckrode Rubber Co., of Newark and New Brunswick, manufactures this flap, and Theodore Weigele, sales manager, declares that the need for it has increased with the advent of the clincher cord tire. The extensor flap is made in two sizes, 30 by 3 and 30 by 3½, the latter being interchangeable with the 31 by 4.

AN INNOVATION IN MAKING CANVAS SHOES

The character, style and serviceability of the modern rubber solid canvas footwear is largely due to the machinery developed by the United Shoe Machinery Corporation. These shoes have substantially the general characteristics of leather footwear, except that the sole is attached by vulcanization. More recently this firm has developed the turn process of canvas shoe making, an innovation which is being widely adopted by the trade. By this process the canvas uppers are made by machinery and the rubber soles are attached by means of thread, much as are leather soles.

The Rubber Trade in Massachusetts

Manufactured Goods

The manufacturing situation in Massachusetts continues encouraging. Except for the small demand for reclaimed rubber and the seasonable dullness in rubber footwear for winter wear, factories are operating at very nearly normal. Very little original equipment tire business is done in this state and for that reason tire production seems likely to continue unabated until autumn. Mechanical goods demand steadily if slowly increases, as does the call for insulated wire, because of long-delayed building operations now under way.

Unprecedented rains during June have brought many retail sales of raincoats and rubbers which will eventually make themselves felt in factory orders. Automobile topping is in active demand, while druggists' sundries are quiet as usual at this season of the year.

Boston Notes

J. V. Mowe, sales manager of the Kelly-Springfield Tire Co., who is touring the eastern branches of the company, was a recent visitor in Boston where he held a conference with the local sales force.

Dr. Lothar E. Weber, the well known consulting chemist, who is returning from England where he was warmly received in rubber circles, is expected in Boston about July 1.

Officials of the Clifton Manufacturing Co., Jamaica Plain, Boston, Massachusetts, announce the appointment of N. Lincoln Greene as general manager of their rubber clothing department. Mr. Greene, throughout his entire business career, has been associated with the rubber clothing industry.

Massachusetts Notes

On the evening of May 17 a complimentary dinner was tendered by the foremen and office force of the Firestone-Apsley Rubber Co., Hudson, Massachusetts, to L. D. Apsley, president of the company. It was at once a welcome to him following his return from Europe and an appreciation of his generous gift of savings accounts to all employes on his arrival. The dinner was held in the Community House, Hudson, Massachusetts, and was followed by the customary postprandial exercises, dancing, and bowling. L. A. Brown, vice-president of the company, was toastmaster. Following the presentation of a framed testimonial, Mr Apsley feelingly expressed his thanks and entertainingly described his European trip.

Warren MacPherson, president of the Cambridge Rubber Co., Cambridge, has returned from an extended business and pleasure trip in Europe. Conditions abroad, he has found, are still so unsettled that the outlook for large foreign business in the immediate future is hardly promising. He anticipates a record year in American business, however, especially in gaiter boots for women designed in accordance with European ideas.

The Hood Rubber Co., Watertown, Massachusetts, has cancelled and retired 1,500 shares of new preferred stock, making the authorized issue 47,000 shares of $100 par value. In addition there is a total of 120,000 common shares, without par value, outstanding, this latter issue being listed on the Boston Stock Exchange.

The Hood company has added rubber heels to its line of products. The heel is known as the Hood Arrow and so will benefit from the cumulative effect of Hood Arrow tire publicity for several years past.

The Brockton Rubber Co., Brockton, Massachusetts, a new concern, has taken over the old Stowe & Woodward plant at Cam-

pello, near Brockton, and will engage in the manufacture of rubber heels. The plant has a capacity of 40,000 to 50,000 pairs daily. Phil C. Stingel, formerly of the Needham Tire Co., Needham, Massachusetts, heads the company and his associates on the directorate include Frederick R. Woodward and Sherman Ward, both of Stowe & Woodward, Nicholas Mullen and Charles B. Strout.

The Panther Rubber Co., Stoughton, Massachusetts, has brought suit against The Barrett Company in the amount of $1,000,000 for alleged losses resulting from the use of a product known as B. R. V. in the manufacture of rubber heels. It is asserted that use of this substance as a substitute for certain oils formerly used rendered heels valued at $733,973.65 unmarketable and wholly valueless.

Rubber Chemist and Manufacturer

David A. Cutler, rubber chemist and president and treasurer of the Alfred Hale Rubber Co., Atlantic, Massachusetts, was born in Wakefield, Massachusetts, in 1879. Following his education in the public schools and a business course in Burdett College, Boston, Massachusetts, he took a special course in chemistry at Wesleyan University in 1900.

David A. Cutler

He started in the rubber business as a billing clerk for the Hood Rubber Co., Watertown, Massachusetts, in 1897. In 1899 he became chemist for the Goodyear Rubber Co., Middletown, Connecticut, and in 1901 acted in the same capacity for the Apsley Rubber Co., Hudson, Massachusetts, and F. A. Woodward & Co., Lachine, Canada. He was chemist successively from 1902 to 1908 for the Calumet Tire & Rubber Co., Chicago, Illinois; Manhattan Rubber Manufacturing Co., Passaic, New Jersey; Manufactured Rubber Co. and the Continental-Mexican Rubber Co., New York, N. Y. As consulting expert for the Intercontinental Rubber Co., New York, N. Y., he was instrumental in the development of guayule and has originated several processes for the treatment of guayule and plantation rubber.

In 1909 Mr. Cutler became chief chemist of the Revere Rubber Co., Chelsea, Massachusetts, and the following year was made general manager of the development department of the United States Rubber Co. In 1913 he opened an office as an expert in crude rubber research in New York, N. Y., and soon became associated with the Acushnet Process Co., New Bedford, Massachusetts, of which he was elected president in 1914. In 1916 he purchased the business of the Alfred Hale Rubber Co., then located in South Boston, Massachusetts, of which he is now president and treasurer. Under his management this firm has successfully specialized in the rubberizing of cloth and the manufacture of molded rubber goods.

Mr. Cutler has continued to serve various rubber companies in a consulting capacity. He has been chairman of the Rubber Section of the American Chemical Society; president of the Rubber Research Corporation, South Braintree, Massachusetts; president of the Lockwood Fibre Co., and a director of the Morrill Process Co.

He is a thirty-second degree Mason, a member of the Commons Club of Wesleyan University, The Rubber Association of America, Boston Chamber of Commerce, Associated Industries of Massachusetts, and the Quincy Chamber of Commerce.

Few men have had such a varied and extensive experience in rubber research or have so successfully combined technical knowledge with manufacturing instinct and business ability.

Treasurer, Boston Woven Hose & Rubber Co.

At a meeting of the board of directors of the Boston Woven Hose & Rubber Co., held on May 22, 1922, the resignation of Henry B. Sprague, who for many years has been treasurer of the company, was accepted and George H. Burgess, who since 1899 has been assistant treasurer, was elected to the position of treasurer.

George H. Burgess

Mr. Sprague's resignation comes after about two years' absence from the intimate affairs of the company, due to illness and his desire, although remaining on the board of directors, to be relieved of the cares of the treasurer's position.

The election of Mr. Burgess as treasurer is a well deserved promotion, not only in consideration of his twenty-three years' service as assistant treasurer, but also in recognition of the manner in which the treasury department has been handled during the past two trying years in the business world during the absence of Mr. Sprague.

The Rubber Trade in Ohio

Manufactured Goods

The end of the first half of 1922 finds the rubber industry at its peak for the year; however, conservative leaders believe that the first few weeks in the second half may witness a gradual lessening in production of tires, but that other lines of rubber production will increase. With the exception of a statement by Harvey S. Firestone, president of the Firestone Tire & Rubber Co., the expression of opinion regarding the slowing down in tire production has been confined to private conversations by some of the leaders, who point out that the reduction is in line with the past history of the tire industry.

While the reduction in July is forecast it will be more noticeable in those factories which derive a large amount of their business from the automobile manufacturers. Those who depend entirely or almost entirely upon consumers' business will probably be able to maintain present production schedules until late in August, while those who have both a manufacturers' and a dealers' business will feel the change in proportion to the amount of manufacturers' business they are accustomed to taking.

This is the opinion of the conservatives. The more optimistic do not look for any further increases, but do not believe that the reduction will be felt so early.

This opinion is based upon the belief that by the middle of the coming month the automobile industry will have satisfied the pent up demand for automobiles, and this, coupled with the pro-

duction and exhibition of new models, will slow up automobile sales. The cars in operation will not be slowed up, however, until late in the motoring season and for that reason those depending upon this class of business need not expect any decreased demand.

Mr. Firestone states that the demand for original equipment has been the chief cause of the high production point reached in Akron at the present time. Whether this demand will continue is uncertain. As far as he can see there is nothing in sight to warrant the belief that production will go beyond its present point this year. He believes that there is already a large overproduction in many types and sizes of tires, that the demand has not kept up with production and that in consequence a surplus has been piled up.

In mechanical goods the upward swing in business has accelerated sales of all lines. The campaign for fall business in boot and shoe lines has been most satisfactory. As predicted, stocks were comparatively low and the dealers throughout the country purchased more goods for stock than was expected. The long rainy spring did much to reduce stocks of rubber footwear. Druggists' sundries show some increase in demand, but the upward swing is not yet as large as that of other rubber goods.

Cheaper Tires at Lower Prices

Although not one single out and out statement is available, it is nevertheless apparent that the tire industry has started to make cheaper tires at lower prices.

Since the inception of the automobile business, the efforts of tire manufacturers have been directed towards making the best possible tire. In 1910 a mileage of 3,000 miles was guaranteed to the consumer, in 1916 this guaranty rose to 4,000 and this continued to increase until 7,500 miles were guaranteed last year and it is estimated now that the average tire will give 8,000 miles of service.

But the signs are now clear that the manufacturers have realized that they have made tires too good, and as a result a large amount of factory space continues to create overhead expenses without any chance for earnings. To overcome this, cheaper tires will be made. The price will continue to go down on these tires and the repeat orders will be more numerous. The number of tires made will be larger, the available factory space will be utilized, and although the profit on each tire will be smaller, the aggregate profits will be larger.

Strange as it may seem, it is apparent that the "gyp" manufacturers who introduced cheap tires with a low mileage return have to some extent converted the other manufacturers to their views. The "gyp" manufacturers have created a demand which the legitimate manufacturers are now going to supply.

Although the trend seems radical now in the tire business, it is only the course which has been followed in other lines for generations. Not many decades ago the cobbler made shoes as good as he knew how to make them. Quality was his aim. Then the shoe manufacturer entered the field with a machine-made shoe. Today shoes which are offered for sale give satisfaction, although they are far from the quality our grandfathers wore. The same has been the case with furniture, clothing, food, and in almost every line the same story is apparent; for that reason the movement in the tire business is not to be looked upon as radical, although it is revolutionary.

Recently several companies placed upon the market tires which contained less rubber, less fabric and were the result of less labor than those of former standard lines. The tires would give satisfaction, the manufacturers stated, but the statement was not as strong as that made regarding the older lines. Other companies followed the example of the leader. Each one of the companies which has placed similar tires upon the market has experienced a remarkable increase in business in these lines.

The consumer knows he is paying less money, he expects to get less service, but nevertheless he is choosing the cheaper tire. The action is the same as must have been the case when years ago our forefathers had a chance to buy either a high cost hand-made shoe or a factory shoe. The factory shoe won over the other to such an extent that the hand-made boot is found only in out of the way rural communities.

High priced and high quality tires will always be available. It is possible to buy $100 tailor-made suits. Those who want that kind of quality buy them. The great mass of the people, however, buy the cheaper suits. So with tires. It will always be possible to buy high priced tires and some persons will prefer them. But the great mass will start buying the cheaper merchandise and repeat their orders. The people want change and they do not want a tire to last for 10,000 to 12,000 miles. It is the trend of the times.

Radio Telephone Plant in Akron

The Avalon Rubber Co.'s plant at Barberton will be used for the manufacture of radio telephone instruments and parts by a company which will be headed, according to present indications, by Clyde Alvis of the Akron News Co.

The sale to the new owners was confirmed early in June by the Federal District Court and possession was taken at once. The purchase price was $28,500. The liabilities of the Avalon company amounted to approximately $35,000.

The company had been in receivership for home than six months and in bankruptcy for a month prior to the confirmation of the sale. The plant has not been in production for more than a year.

The new company intends using a combination of rubber in making parts of the proposed new radio telephone. The parts will not be made of hard rubber or other materials now used in their manufacture.

Zinc Oxide Plant May Locate in Akron

The International Lead Co., a subsidiary of the Anaconda Copper Mining Co., will probably build a plant in Akron and supply a new zinc oxide to the rubber industry. Officials of the company refused to confirm this, but it is reported that tentative contracts have been made for the new product. It is said that the first unit of the proposed plant will cost in the neighborhood of $1,000,000.

Firestone Reports Optimistic

The Firestone Tire & Rubber Co. has increased factory wages and office salaries 10 per cent, prompted by the belief of President Firestone that the men should share in the new prosperity just as the workers took their cuts and reductions during the period of depression. The increase led to a general revision of rubber wages in Akron.

The original Firestone plant site, on which the present company was started more than twenty years ago, is for sale, and the company is now making preparations to move into the new steel products building, which has been completed for more than a year.

Earnings for the first six months of the Firestone fiscal year amounted to more than $2,500,000. Quarterly dividends on the outstanding preferred stock have been easily earned.

Goodrich on an Eight-Hour Basis

The B. F. Goodrich Co. returned to what may be correctly called an 8-hour day basis during the past month, but officials of the company cautioned against the use of "Eight-Hour Day" in connection with the change. During the past year production has been spasmodic in various lines and a steady working schedule was impossible. In some departments longer days were required at certain times, while in others the shifts could be shortened.

The expected increase in demand not only for tires from consumers, but in mechanical goods, boot and shoe lines and some increase in druggists' sundries, has now brought production to a more normal point and made the equalization of shifts possible. Production at present is above 20,000 tires a day, while other departments have speeded up production. The company has not

taken on any original equipment business, and for that reason is one of the companies whose production schedule may be expected to be maintained until fall.

Goodyear Activities

Announcement regarding a new eight-wheel bus, production of the 45,000,000th pneumatic automobile tire, development of new uses for kite balloons and gradually increasing production were the outstanding features of the past month at the Goodyear plant.

Production is now 26,000 tires a day, of which more than half are cords. More than 3,000 tires of the new cross rib cord line, which sells for 20 per cent below the standard list, are now being manufactured daily.

More than 900 students took the various courses offered by Goodyear Industrial University during the past year and present indications are that more than 2,000 students will be registered in the school with the opening of the fall term in September.

James Scott, formerly in the labor department of The Goodyear Tire & Rubber Co., has been named assistant to Hugh Allen, head of the publicity department.

Frank K. Espenhain, for the past year head of the export department of The Goodyear Tire & Rubber Co., has succeeded H. H. Springford as assistant to president E. G. Wilmer of the Goodyear company. Mr. Espenhain is succeeded by A. G. Cameron.

Akron Notes

H. J. Vance, of The B. F. Goodrich Co., has been succeeded as president of the Akron Engineering Society by L. G. Tighe, of the Northern Ohio Traction & Light Co.

The Firestone Tire & Rubber Co. continues to receive wide publicity through its newspaper department by which advertising is placed directly with newspapers without the use of advertising agencies. Mark L. Felber has explained the operations of the department before a number of press associations recently. Mr. Felber was former editor of the *Akron Press*.

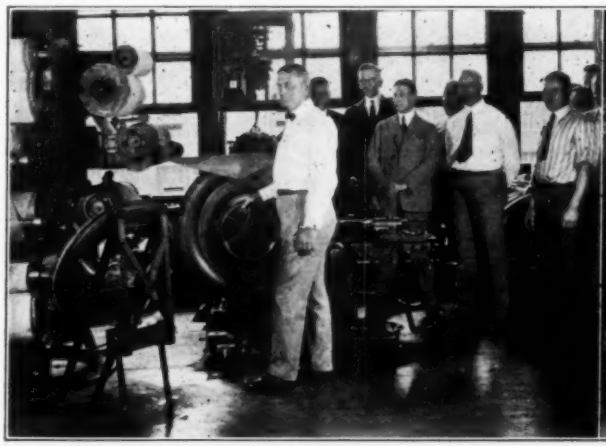
The Franz Foundry & Machine Co. announces that a large part of the stock offered to obtain capital for expansion has been sold and that the past month was one of the largest in the production history of the company. Temporary buildings are being utilized to meet demands.

The Swinehart Tire & Rubber Co. is manufacturing the new cushion tire placed on the market by the Brubaker Tire & Rubber Co. William Brubaker of the Akron Gear & Engineering Co. is head of the new company.

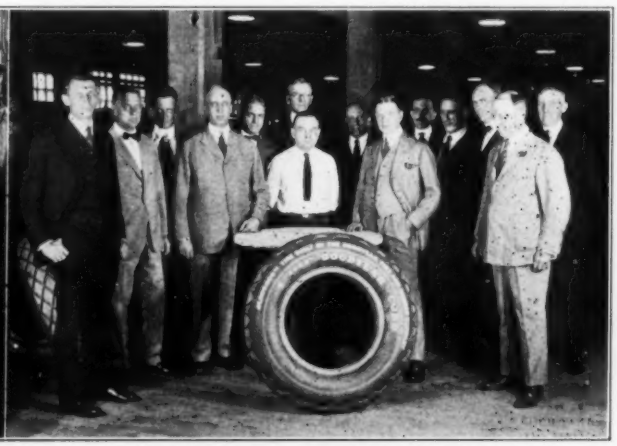
Meyer & Brown, Inc., crude rubber importer 347 Madison avenue, New York, N. Y., has opened offices at 318 Metropolitan Building, Akron, Ohio., with E. M. Salsberg in charge.

L. A. McQueen, formerly assistant to E. D. Gibbs, director of the advertising department of The B. F. Goodrich Co., Akron, Ohio, has been recently made head of this company's newly created sales promotion department. All communications with regard to advertising should continue to be directed to the advertising department.

More than $1,000,000 worth of tires were contained in a single recent shipment by The B. F. Goodrich Co. to Australia. The shipment was the largest ever made to that continent by any Akron rubber company as far as can be learned.



William Stephens, General Superintendent, Starting the First Ply



The Forty-Five-Millionth Pneumatic Tire Produced by Goodyear

Impressive Ceremonies Attended the Building of the 45,000,000th Tire at the Akron Factory of The Goodyear Tire & Rubber Co.

The Amazon Rubber Co. announces that production has been trebled during the past two months and that capacity has been reached. The reason for the sudden increase in business on the part of this company, which was reorganized last year, is attributed to the popularity of the new low priced cord tire which the company recently placed on the market.

Garrett H. Barnes, of Roslindale, Massachusetts, who was graduated in June from the Massachusetts Institute of Technology, has been awarded the Goodyear rubber fellowship at the University of Akron. He will take up his studies in the Akron university next fall according to present plans. The municipal University of Akron is the only university in the United States which gives a course in rubber chemistry.

H. M. Bacon, formerly with The B. F. Goodrich Co., and more recently with The McGraw Tire & Rubber Co., has been made a special sales representative of the Goodrich company.

The Miller Rubber Co. passed the preferred dividend due June 1, which it was generally expected would be paid. It is now believed that resumption of the dividend payments will be started with the quarterly payment due September 1.

Miller sales representatives attended at the factory during the month the first general convention which has been held for several years. The general tone of reports given by the field men was optimistic.

The National Sulphur Co., Akron, will be ready to start production within the next month, according to present indications.

A. G. Cameron, who for almost ten years has been connected with The Goodyear Tire & Rubber Co., Akron, Ohio, has been recently appointed manager of this organization's export company. Mr. Cameron, during his period of service, has been successively

in charge of the Dallas and St. Louis branches, later becoming manager of the Australasian export division, and finally export sales manager, which position he held at the time of his present appointment.

Cleveland

Guy Hamilton, for the past two years engaged in other work, has returned to the sales department of the Osborn Manufacturing Co., 5401 Hamilton avenue, Cleveland, Ohio, while E. W. Cannell becomes manager of sales extension. Mr. Cannell, who for two years was advertising manager, has been with the Osborn organization for over ten years.

The Wishnick-Tumpeer Chemical Co., 365 East Illinois street, Chicago, Illinois, dealer in rubber chemicals, oils, and colors, has recently opened an office and warehouse at Davenport avenue and East 14th street, Cleveland, Ohio, in charge of C. A. Hemingway.

Ohio Notes

The Wilson Rubber Co., Canton, Ohio, claims to be approximately ten weeks behind on deliveries of its products which include electricians', surgeons' and household gloves. The officers of the company are: John S. Willis, president; Fred J. Wilson, vice-president and general manager; and Wendell Herbruck, secretary and treasurer.

The Seiberling Rubber Co., Barberton, has increased production and is showing satisfactory net earnings, according to current reports. Sales during May were said in banking circles to amount to approximately $450,000, and net earnings in the neighborhood of $80,000.

The Rubber Products Co., Barberton, announces that production at the present time is larger in the druggists' sundries department than is customary at this time of the year. Druggists are ordering for replacement but continue to buy on a small scale which, when sufficiently prolonged, produces the same amount of business as larger orders coming at one time.

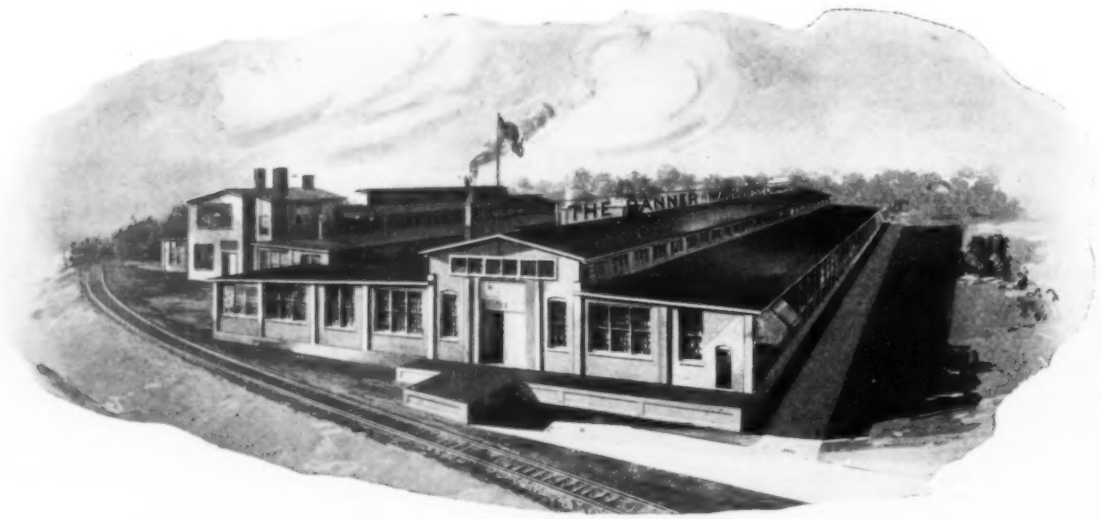
The Excel Rubber Co., Wadsworth, Ohio, has been rescued from receivership and is now in production under the presidency of Fred Falk, with a new line of ladies' belts which is proving popular.

R. E. Cowden, receiver of The Master Tire & Rubber Co., Dayton, Ohio, reports that the company is in excellent condition and may be returned to the stockholders. Officials claim that the improved outlook has justified the appointment of the following district managers: B. B. Morris for western Ohio and southern Michigan; F. C. Stetson for the New England states; A. Holcomb for Oklahoma and Texas, with headquarters at 711 West 19th street, Oklahoma City, Oklahoma; and M. W. Miller for western Virginia, with headquarters at Harrisonburg, Virginia. W. B. Ruston, who originally organized the company, and was president and general manager until the appointment of the receiver, is now director of sales.

The Tuscora Rubber Co., New Philadelphia, Ohio, manufacturer of "Tuscora" tires and tubes, is now in full operation under the direction of the receivers, C. C. Adams and H. J. Krantz, who claim that present conditions are most encouraging. The newly appointed officers are as follows: Norman Senhauser, president; C. J. Pfau, vice-president; and C. E. Kreiter, secretary and treasurer. Directors include: Joseph Hrabak, T. B. Stroup, W. C. Immel, and Alvin Marsh.

Progressive Rubber Machinery Company

The Banner Machine Co., Columbiana, Ohio, has a complete and up-to-date plant devoted exclusively to the production of equipment and supplies for rubber factories. It is well located for this purpose, being situated on the main line of the P. F. W. & C. Railway, about equally distant from Cleveland, Pittsburgh and Akron. The present plant consists of a machine shop 270 by 130 feet, a foundry 210 by 100 feet and a two-story pattern shop 48 by 40 feet, all of brick and heavy timber construction, arranged and equipped so that production costs are reduced to the minimum.



Plant of The Banner Machine Co., Columbiana, Ohio

The principal products are molds, cores and equipment for both cord and fabric tires, fabric driers, tire building machines, roller bearing tire stands, tube wrapping lathes, tube removing machines, paper wrapping machines, bead trimmers, cord fabric impregnators, tire section cutters, rag wrapping machines, washers, mold trucks and a complete line of hose making machinery.

The present officers are: F. H. Grove, president and general manager; and E. T. Coyle, secretary and treasurer. Mr. Grove, who invented and perfected most of the special machinery now

being manufactured by the company, has had a wide and varied experience in both the rubber and machinery business and has had active charge of the company since its origin.

While business for the past year has been slack at times, the steadily increasing demand for new and improved machinery has kept the plant in continuous operation, and all indications are favorable for a very good business the coming year.

A Promising Young Mechanical Engineer

Criss Weston Franz, second vice-president of the Franz Foundry & Machine Co., Akron, Ohio, and one of the most promising young rubber machinery men, is a native of the "Rubber City," where he was born April 22, 1897. He received his education at Phillips Exeter Academy, Exeter, New Hampshire, and the Sheffield Engineering School at Yale.

Criss W. Franz

During his vacations he was associated with the Williams Foundry & Machine Co., Akron, Ohio, of which his father, who is now president of the Franz Foundry & Machine Co., was then secretary-treasurer. His experience with this well known firm brought him into intimate relation with the rubber manufacturing trade and its machinery requirements.

When the Franz Foundry & Machine Co. was organized by his father, following the change in control of the Williams company in 1918, Mr. Franz became vice-president, which position he now holds. He left Yale in December, 1917, to enter the World War where he gave a good account of himself as an ensign in the Naval Reserve Flying Corps.

Mr. Franz is popular in social as well as rubber circles, and is a member of the Yale Club, St. Anthony Club and Portage Country Club.

The Rubber Trade in the Midwest

Midwest Rubber Manufacturers' Association

The regular monthly meeting and luncheon of the Midwest Rubber Manufacturers' Association was held June 13 at the Hotel Morrison, Chicago, Illinois, with W. W. Wuchter, president, presiding.

The principal speaker was Frank T. Bentley, traffic manager of the Illinois Steel Co., who spoke on transportation. He predicts that the fall revival of business will probably cause a car shortage as in 1920 and in that case dependence for relief must be in motor trucks. Mr. Bentley questioned whether the proposed Great Lakes-St. Lawrence waterway will prove of great benefit to the Middle West or the United States as a whole because of severe winter conditions at Montreal during four or five months of the year. Transportation over good motor roads is a most promising future development in the movement of merchandise and supplies.

O. C. Diehl, of the Dow Chemical Co., Midland, Michigan, gave a short talk on the manufacture of certain compounding ingredients for rubber work.

Following the luncheon a number of manufacturers expressed their views of the tire industry in the future. It was suggested that cooperative selling of tires similar to the cooperative selling organizations among farmers would enable small manufacturers to compete with the larger companies. Those present generally were optimistic and predicted a large volume of tire sales to the consumer in the near future, and reported operations at good capacity at the present time.

Fabric men present stated that in view of the strong position of cotton, there is more confidence in cotton fabrics, and at today's prices they are a good investment. They also stated that tire manufacturers are busier now than in the past, and predicted that if the popularity of cord tires continues to grow, there will soon be twice as many cord as fabric tires made.

Owing to the fact that tire manufacturers are very busy and to approaching warm weather, the July meeting is postponed. The next meeting will be held August 8, 1922.

Chicago

The Better Tires Co., mail order jobber of tires and accessories, with offices at 2023-2029 South Michigan avenue, Chicago, Illinois, reports that George O. Smith and J. N. Levick have joined its advertising forces. Both were formerly with Sears-Roebuck & Co. Mr. Levick having been chief of the layout division of the advertising department, will serve in a similar capacity in his new connection.

A. Daigger & Co., 54 West Kinzie street, Chicago, Illinois, dealer in rubber chemicals, colors, and oils, reports an increasing demand for oxide colors. Another salesman, J. B. Phillips, has been employed to take care of the company's trade throughout the West. A. Daigger & Co. is the sole representative and distributer for the Lookout Manufacturing Co., manufacturer of oxide colors.

The Lincoln Highway Tire & Rubber Co., 1339 South Michigan avenue, Chicago, Illinois, will soon have ready for delivery a new tire, to be known as the "Lincoln Highway Cord." R. H. Saunter is sales manager.

An organization formerly known as the Union Rubber Works was incorporated some weeks ago under the name of the Harlem Rubber Co., 1652 North Kostner avenue, Chicago, Illinois, capitalized at $10,000, with the following directors: George C. Siebert, Joseph A. Netzel, and Louise R. Netzel. The company will manufacture and sell rubber products.

The Hydro-United Tire Co., Pottstown, Pennsylvania, has appointed William F. Hedges manager of its branch at 1051 West 35th street, Chicago, Illinois. From that office the territory from Ohio to the Pacific Coast will be handled. The company maintains another branch at San Francisco, California.

Michigan

The Marine Rubber Corporation has taken over the concern formerly known as the Ludington Rubber Co., moving the plant from Ludington, Michigan, to Sparta, near Grand Rapids, Michigan. The company's tire, originally sold under the name of the "Ludington Armored," was renamed the "Marine Armored" and was described in our April issue. Officers of the new organization, which succeeds the earlier company, are: A. H. Gruber, president; A. W. Newberg, vice-president; Fred Newberg, secretary; and Emil Newberg, treasurer.

According to a statement made by officials of the Grand Rapids Tire & Rubber Corporation, Grand Rapids, Michigan, the "Corduroy Cords" manufactured by this concern are now handled in every state in the Union, this distribution having been accomplished since July 1 of last year. "Corduroy Cords" are said to be rut-proof, having a special corrugated sidewall protection. Harry D. Kline is advertising manager of this corporation.

The present property, valued at $75,000, of the Aero-Cushion Inner Tire & Rubber Co., Saginaw, Michigan, is to be sold, as not adapted to the company's requirements, and a new building is to be erected, costing approximately $40,000. Although plans are not yet completed, the structure will probably be one story in height and thoroughly modern in construction and equipment. J. J. O'Shaughnessy is general manager.

Wisconsin

The Latex Tire & Rubber Co., Fond du Lac, Wisconsin, has a plant capacity of approximately 630 tires daily, about 40 per cent of the output at this time being cords. The southern and eastern business is handled through distributers. The officers include: Edward Yockey, president; John Brofka, vice-president; T. W. Meiklejohn, secretary; and Orlando J. Koll, treasurer.

Reorganization of Racine Auto Tire Co.

The reorganization of the Racine Auto Tire Co., Racine, Wisconsin, has resulted in the establishment of a new firm, under the name of the Racine Horseshoe Tire Co. J. C. Lawrence, of the New York banking house of S. W. Straus & Co., and previously with the Firestone Tire & Rubber Co., Akron, Ohio, is president and general manager, while other executives are: O. D. Hollenbeck, also formerly with the Firestone organization; Raymond H. Weins, treasurer; and L. H. Shepherd, secretary and sales manager. The directors include: J. C. Lawrence, chairman; and H. H. Whiteman, N. Howard Green, H. J. Lyall, Francis J. Johnson, W. C. Crawford, J. W. Bate, F. K. Sivyer, and William O. Goodrich.

Midwestern Notes

J. E. Harris, vice-president in charge of sales of the Ardmore-Akron Tire & Rubber Co., Ardmore, Oklahoma, began his rubber career with the American Hand Sewed Shoe Co., Omaha, Nebraska, which was afterward taken over by the United States Rubber Co. There he became interested in the tire business and later was appointed in charge of sales of the A. J. Stephens Rubber Co., Kansas City, Missouri, distributer of tires and tubes and manufacturer of tire accessories.

J. E. Harris

In November, 1920, Mr. Harris became associated with the Ardmore-Akron Tire & Rubber Co. as sales manager, and on May 1 of the present year was elected vice-president in charge of sales. He is well known throughout the Mississippi Valley and now has associated with him W. B. Pifer, one of the best tire salesmen in that territory.

Osman Shaw, R. T. Cooke, and Sir Henry Hollingdrake, managing directors of Francis Shaw & Co., Limited, Manchester, England, recently visited, as European representatives, the plant of the Hunter Dry Kiln Co., Indianapolis, Indiana. The visit is part of a plan for introducing in England, on the Continent, and on the plantations, the Hunter system of drying and processing rubber. P. R. McCampbell, vice-president of the Hunter company, who has been supervising the installation of such equipment in Europe, has recently returned to this country.

The Overland Tire & Rubber Co., Omaha, Nebraska, reports encouraging prospects for 1922. The daily production of approximately 600 tires and 500 tubes has been recently increased, 900 tires a day now being manufactured, while the two daily nine-hour shifts have been replaced by three eight-hour shifts.

The Rubber Products Manufacturing Corporation, Fourth and Central streets, Kansas City, Kansas, has been succeeded by the Rubber Manufacturing Corporation, which, under the presidency of P. E. Werner, will carry on the business of the earlier organization. The new concern, capitalized at $500,000, will at once begin the installation of additional equipment in order to increase the present production to 1,000 tires and 1,000 tubes a day. Mr. Werner was recently elected general manager of the Sioux City Tire & Manufacturing Co., Sioux City, Iowa, and will, therefore, operate at once both factories whose combined daily capacity is 1,500 tires and 1,500 tubes.

The Rubber Trade on the Pacific Coast

Manufactured Goods

Optimism is generally expected to prevail more or less continuously on the Pacific Coast, and not without good reason. The population relatively is growing faster than that of the East, South, North, or Midwest; natural resources are practically unlimited; capital finds even legal interest rates much higher and industrial profits generally much better than elsewhere; labor troubles are decidedly fewer and less acute; help is abundant; and a foreign market across the Pacific holds a lure of vast possibilities.

The sharp cut in the prices of smaller size tires has had a decided effect on the irregular dealings of "gyps," and further price cuts will be unnecessary, it is claimed. Regular dealers remark a notable jump in sales of standard tires and a growing scarcity of seconds and tires were buffed-off brands. Automobile registration is steadily growing on the Coast. For the first four months of 1921 in California the number of motor vehicles registered was 30,262; for the first four months of 1922 the number was 43,325. Of the increase of 13,063, just 12,000 were passenger cars.

The demand for rubber accessories, repair stocks, etc., is increasing and vulcanizers are getting busy again.

Considerable rubber belting in the larger sizes has been sold lately in the coast section, dealers estimating the increase at 20 per cent over that of a year ago. There is an increasing demand for balata belting, especially in mining operations. Balata, it is claimed by some, stands up better in cyaniding and similar acid work than rubber. However cement makers and general contractors prefer rubber conveyor belt to leather or plain web belting.

A good demand for plumbers' rubber sundries and general mechanical rubber goods was reported during the past month, due to the erection of numerous hotels, apartment houses, etc.; and local factories and branch houses report a large number of advance orders on garden hose. Greater activity than ever in the petroleum industry accounts for some good sales of late in suction and discharge hose.

There has been a 30 per cent increase over the spring of 1921 in orders for rubber footwear of nearly all the varieties, deliveries of which will begin in September. The Coast has had a very backward spring with an unusual amount of rain. Retail dealers were caught so short that they offered a premium on goods, and eastern footwear concerns had little trouble in urging the retailers to stock up more liberally.

Los Angeles and Vicinity

The Angelus Heel & Rubber Co., 1417 North Main street, Los Angeles, is very busy working on hard rubber parts for radio telephone apparatus.

Business is reported exceptionally good, too, in the company's staple line of heels, and a good trade is also being done in soft rubber specialties.

Six more salesmen have been added to the United States Rubber Co.'s Los Angeles branch, and plans have been made for a more extended selling campaign in all departments. J. B. Magee, branch manager, has also been working out with the manager of the San Diego branch plans along the same lines. The United States company will take an active part in the big Los Angeles trade exposition early in the fall.

The United States Compression Inner Tube Co. has finished the construction of its factory at Burbank, Los Angeles County,

California, and the greater part of its mechanical equipment has been ordered. Plans are being made for production within about ninety days, and for the operation of the California factory in conjunction with the company's other plants in Pennsylvania and Oklahoma.

The E. M. Smith Co., 618 Clarence street, Los Angeles, is one of the very busy rubber concerns on the Pacific Coast. It recently erected an additional mill on the opposite side of the street, and installed two new 60-inch mills and one 48-inch mill, in addition to eight more hydraulic presses. It is operating at capacity and is turning out a large quantity of transmission belting, sheet and rod packing, pump valves, auto brake lining, etc. The company also controls the West Coast Asbestos Co.'s mills at Downey, California, a new concern said to be the largest of its kind in the West.

Oil field supplies are running strong at the plant of the West American Rubber Co., 400 North avenue 19, Los Angeles, the products including rotary drill hose, dredging sleeves, well packers, pipe rings, pump valves, and piston, rod, and sheet packing, as well as a general line of mechanicals, besides rubber heels and several specialties.

Elmer S. Firestone, general manager of the Los Angeles branch of the Firestone Tire & Rubber Co., who recently returned from the international conference of over 600 of the company's sales managers at Akron, reports that the Los Angeles branch led all other branches in the United States in sales of tires of all sizes. Mr. Firestone has also been studying trade conditions at first hand in Arizona and Imperial Valley. Business is booming, he says.

Thomas H. Thropp, president and general manager of the Hendrie Rubber Tire Co., Torrence, California, is meeting with success in the operation of the factory. The company is now producing 150 tires and the same number of tubes daily, and a night force will soon be employed.

The J. B. Reilly Rubber Co., 2432-2434 E. 56th street, Los Angeles, specializing solely in "Mission" red inner tubes, began production in June, and expects within a few weeks to be running on full capacity of 1,200 tubes a day. The new equipment recently installed has already proved its value in cutting down production cost while improving the quality of the goods.

The Goodyear Tire & Rubber Company of California celebrated on June 14 the second anniversary of the opening of the Los Angeles plant. Incidentally the company produced its 1,124,697th casing and its 1,263,421st tube on the same day. H. E. Blythe, factory superintendent, entertained at luncheon the men who built the tire, with C. L. Young, of the Goodyear Textile Mills and members of the factory council and sales force. The company built its first tire June 14, 1920. On June 14, 1921, it had built 344,279 tires.

San Francisco

The New Jersey Zinc Co., 160 Front street, New York, N. Y., now has sales offices in San Francisco, Pittsburgh, Cleveland, New York, and Chicago. The most recent of these will be known as the New Jersey Zinc Sales Co., Merchants Exchange Building, San Francisco, California. R. Hursh is district sales manager. Stocks will be carried at the Haslett warehouse, 228 Pine street, San Francisco, and the Santa Fe warehouse, 300 Avery street, Los Angeles, California.

Officials of the Lee Tire & Rubber Co., 245 West 55th street, New York, N. Y., announce that Tom H. Wilkinson has been recently appointed the Pacific Coast representative of their organization. Mr. Wilkinson has for a number of years been connected with the United States Rubber Co.

The Keaton Tire & Rubber Co., San Francisco, is operating at practically full capacity. The company is discontinuing its retail service, and is turning over customer business in tires, tubes, rims and rim parts to a selected number of dealers.

General manager Powell of the San Francisco branch of The B. F. Goodrich Rubber Co. finds a very gratifying growth in general sales on the coast over June, 1921, according to reports from all the company's branch houses. Tires and mechanicals are holding up particularly well.

Every department working on full time and production much ahead of the same period a year ago, is the report from the Pioneer Rubber Mills, San Francisco. Belting and hose are running particularly strong.

An important branch of the India Tire & Rubber Co. is at 455 Second street, San Francisco, California, under the direction of F. L. Ryan.

Southwestern Notes

Although the latest government reports show the cotton crop in Southern California to be 84 per cent of normal, with a corresponding increase in Arizona and in upper Mexican territory, southwestern cotton men declare that the average is really higher and that the crop this year will be abundant, especially as the Southwest enjoys comparative immunity from insect pests and has a long, dry growing season. With the considerable increase in planting this year, due to a general improvement in world cotton prices, it is believed that the 1922 southwest cotton crop will be double that of 1921. Growers of Pima long staple cotton are confident of getting a higher average price than now current, and are much encouraged by reports that the competitive crop in Egypt is far below normal and that the prospects for increasing world-wide demand are exceptionally good. Banks too, are taking a more favorable view and are lending freely on cotton collateral that was ignored a year ago.

Cotton experts are following with much interest an experimental planting of Meade cotton—with a fiber 1 11/16 inches long and rivalling Sea Island in quality—in Imperial Valley, Southern California. The farthest west in which this new variety of Upland type has been grown successfully thus far has been in northeastern Texas, but cotton men believe that conditions for its growth are just as favorable in the extreme southwest as in the Lone Star State.

Northwestern Notes

Oregon

The Cassidy Tire Co., Portland, Oregon, headed by George K. Cassidy, has recently become distributer for The India Tire & Rubber Co., Akron, Ohio.

To promote better feeling and understanding, dealers in tubes and casings in Portland, Oregon, have organized the Portland Tire Dealers' Association and may soon become affiliated with the National Tire Dealers' Association. The officers are: president, Jack Fletcher, Fletcher & James; vice-president, A. L. Steele, Western Tire Sales Co.; secretary-treasurer, Martin F. Swift, Howell-Swift Tire Co.; the directors are the officers and George K. Cassidy, Cassidy Tire Co.; W. L. Powell, General Tire Co.; Seth Leavens, Leavens-Howard Co.; J. C. Burch, Pacific Tire & Supply Co.

The Federal Rubber Co., Cudahy, Wisconsin, has opened a general warehouse at 428 Flanders street, Portland, Oregon. The company reports a considerable increase in business on the coast section in the past year.

Washington

The large business of the General Tire & Rubber Co., Seattle, has been taken over by the Sutherland Co., dealers in tires, tubes, automobile accessories, and miscellaneous rubber goods.

The Occident Rubber Co., with offices and plant at Beverly Park, Everett, Washington, is now in operation and producing

hard rubber and mechanical goods. In the near future tires will be added to its list of manufactures.

The Jack Tire & Rubber Co., Spokane, Washington, is now producing about 70 tires and tubes a day at its plant, which has a 24-hour capacity of 500 tires and tubes. An excellent outlook for future business is also reported. T. G. Richards, president of the company, was formerly president of the Quabaug Rubber Co., North Brookfield, Massachusetts.

President Canadian Consolidated Company

William A. Eden, recently elected president of the Canadian Consolidated Rubber Co., Limited, is a native Canadian who in fifteen years has worked his way upward, step by step, from a factory position to head of Canada's greatest rubber company.

W. A. Eden

Born in Woodstock, Ontario, in 1882, he was educated in the public schools of that place and the Collegiate Institute, from which he was graduated in 1901. That same year he entered the employ of the Imperial Bank of Canada as a clerk, resigning in 1907 to take a similar position with the Canadian Rubber Co. of Montreal, Limited. Two years later he was appointed paymaster, becoming an accountant for the Canadian Consolidated Rubber Co., Limited, in 1910 and chief accountant in 1913.

In 1915 he was elected secretary of the company, in 1919 vice-president, and in April of the present year president, succeeding Charles B. Seger, who became chairman of the board. Since 1919 he has been president of the Canadian Consolidated Felt Co., Limited, and is now president of the Rubber Association of Canada. He belongs to various Masonic bodies and is a member of the Country Club of Montreal, the Canadian Club, Canadian Manufacturers' Association and Montreal Board of Trade.

Mr. Eden is popular with his associates and many friends who know and appreciate his ability, genial sincerity, honesty and earnestness of purpose.

Canadian Notes

Work will be resumed on the construction of the Firestone Tire & Rubber Co.'s tire factory at Hamilton, Ontario, which was suspended at the end of the last peak period in the industry. The new plant will have a capacity of 3,000 tires a day and will give Firestone a total daily capacity of more than 30,000 tires. It is reported that the new plant will be in operation before fall. An offering of $1,500,000 of 7 per cent bonds has been made to finance the Canadian plant.

Although operating at capacity and working a double shift, the Tiger Tire & Rubber Co., Limited, Belleville, Ontario, Canada, manufacturer of "Tiger" tires, reports that it is still busy with unfilled orders.

NATIONAL SAFETY COUNCIL TO HOLD ANNUAL CONFERENCE

The Annual Conference of the National Safety Council will be held August 28-31 at Detroit, Michigan, and a program of much interest has been prepared. During the second and third days of the conference the Rubber Section will hold a special session, which will undoubtedly attract many connected with the industry. Those in charge of the Rubber Section include: chairman, H. T. Martin, The Fisk Rubber Co., Chicopee Falls, Massachusetts; vice-chairman, C. F. Horan, Hood Rubber Co., Watertown, Massachusetts; and secretary, E. W. Beck, United States Rubber Co., New York, N. Y.

Interesting Letters from Our Readers

Facts About I. R. W. Publicity

TO THE EDITOR:

DEAR SIR: Some months ago you published in your valuable paper an illustration and description of the "Rogers Duplex Revolving Heel."

Although the article occupied a very small space, and was not at all conspicuous, we received letters from about every section of the United States, and many from foreign countries asking for sample pairs of heels, and if selling agencies were obtainable.

We take the liberty of advising you of these facts, as we were astonished at the results obtained from so small an announcement.

Pittsburgh, Pa. THE ROGERS RUBBER CO.

Flue Gas Practical for Preventing Spreader Fires and for Solvent Recovery

TO THE EDITOR:

DEAR SIR: We have noted with interest the letter signed "Inquirer" on the use of carbon dioxide acid gas for spreader fires, and the answer by "Expert," in the January 1 number of THE INDIA RUBBER WORLD.

It may be of interest to "Inquirer" to know that this corporation has had recovery plants in operation for over four years in connection with impregnating and spreading equipment, with entire absence of fires and explosions. This has been possible by the use of flue gas as an atmosphere into which the solvent evaporates, which, of course, necessitates enclosing the impregnating or spreading equipment in a cover which is practically gas-tight. The flue gas is simply and cheaply produced by burning the coke in a small oven. After washing, cleaning and drying, the gas is piped to the hood enclosing the solvent-using equipment, through which it passes counter-currently to the fabric undergoing treatment, leaving the equipment containing 30 per cent or 40 per cent solvent. Since the solvent-vapor-flue-gas mixture is non-explosive and non-inflammable, it can be handled for recovery without danger. Recovery is effected by simple condensation in a surface condenser in most cases. The solvent thus recovered is available for reuse without distillation.

LEWIS RECOVERY CORPORATION.

Cambridge, Massachusetts.

NATIONAL EXPOSITION OF CHEMICAL INDUSTRIES

During the week September 11-16 inclusive, and immediately following the fall meeting of the American Chemical Society, the Eighth National Exposition of Chemical Industries will be held at the Grand Central Palace, New York, N. Y. Three full floors of the exhibition hall have already been taken and part of a fourth, and 350 exhibitors have already contracted for space. Raw materials, machinery and finished products will be especially under consideration at this year's session; many new articles will be exhibited for the first time; and progress along many lines of manufacture will be noted. The office of the managers, Charles F. Roth and Fred W. Payne, is in the Grand Central Palace, Lexington avenue and Forty-sixth street, New York, N. Y., and any inquiries should be addressed to them there.

REPLETE WITH INFORMATION FOR RUBBER MANUFACTURERS—H. C. Parson's "Crude Rubber and Compounding Ingredients," also "Rubber Machinery."

The Rubber Trade in Great Britain

By Our Regular Correspondent

American Invasion of Europe

PRESUMABLY what one hears about the plans of American business men to secure a firmer footing in European markets is based on fact, and it will be interesting to see the results. It is understood that Americans are now ready to supply Europe with what it wants, in the form it wants it, instead of trying to sell what America wants Europe to have.

The initial stages of the campaign seem to have been successful except in one respect, and this is with regard to the use of Ireland as a base of operations. The idea, I gather, was to establish on the Irish coast large distributing warehouses to be followed later by the equipment of factories for the assembling of parts and finishing off partly manufactured goods. The gaining of cheap labor and cheap transport was the attraction in this step, which also defeated the laws against importation. Now, however, the political situation has caused this part of the business scheme to be abandoned, at any rate for the present.

All this refers to goods generally in which rubber goods are included. As regards American motor tires, I have no statistics to show whether or not their popularity in this country is equal to what it was in the war period when certain other foreign makes were unobtainable. I hear, however, that the popular tire of the moment seems to be the Michelin Cable, though the fact that *cable* is French for cord and is not the English word does not seem to be generally known

America keeps cheerily asserting that trade is improving day by day, though she still has large numbers of unemployed and keeps busy raising new protective barriers which the greatest optimist cannot pretend is a sign that the industry of the country is strong enough to face all comers on equal terms. According to Fordyce Jones, the Americans recognize that oversea markets for their tires will be absolutely necessary in a short time as they will be making in excess of their own requirements. It seems, then, that we are likely to witness a tug of war between America and France for British buyers who favor foreign tires.

The Institution of Rubber Industry

The last meeting of the session was held in London on May 12, when Dr. Lothar E. Weber, of Boston, Massachusetts, read a paper on the practical uses of accelerators in the United States. He pointed out the important position to which organic accelerators have attained in the last six years in American works, an important statement being that though such a large number of different bodies have been put on the market there are really only a few which are used to a large extent. An interesting point brought out was the toxic effect of litharge upon most of the accelerators, and because litharge is so generally used in dry heat mixings accelerators are not used in the process of vulcanization.

Unlike some of our English enthusiasts, Dr. Weber does not try to minimize the poisonous effect of such accelerators as aniline and hexamethylene tetramine.

The fact that the guanidine derivatives have come into increased favor is due to some extent to their non-poisonous character, while paraphenylene diamine is so poisonous that, in the author's opinion, it ought to be barred from rubber works.

These remarks about toxicity should prove valuable to our manufacturers as they will be able to utilize the experience of the Americans without having to get at the facts for themselves, perhaps with disastrous consequence to the health of their workmen. In the case of the organic chlorine compounds which are now used under regulations, nothing was known about their toxic properties until the first inquests were held, and there is no law in England to compel a seller to investigate the properties of any new compound he may put upon the market. It appears to be part of the American manufacturer's philosophy to help other people out of their difficulties, so no doubt these trials of accelerators, followed by publication of the results obtained, will come as a matter of course.

On a date subsequent to the above lecture Dr. and Mrs. Weber and J. S. Lowman, visitors from America, were entertained at dinner in London by the Council of the Institution and Dr. Weber in the course of his speech emphasized the fact that secrecy among manufacturers is a thing of the past. Manufacturers in America, he said, are now able to call up a competitor and get detailed information on any point of technical interest. Large rubber factories, it seems, are in the habit of sending technical men on periodical visits of inspection to other rubber factories, the result being that there are very few secrets if any in the United States.

All this sounds very nice and brotherly, but I am afraid we are still a long way behind America, because if A is making certain rubber goods and things turn out wrong, the harassed foreman is not in a position to ring up B's works in the same locality and request help to put things right. Perhaps Dr. Weber's visit, which was so much enjoyed by the representatives of the British rubber trade, will be the stepping stone to its reversal of our past policy.

The post of secretary to the institution, which has been vacant for a little time, has been filled by the appointment of W. F. V. Cox, a son of W. F. Cox, who is connected with Wm. Warne & Co., Limited. He proposes to apply himself assiduously to augmenting the list of members, which is as yet by no means so large and representative as it no doubt will be in the near future.

Dunlop Rubber Co., Limited

The interesting announcement is made that Sir Eric Geddes has been appointed a director of the Dunlop Rubber Co., on the board of which another former railway expert, Sir Guy Granet, also sits. It is generally asserted that Sir Eric will shortly be appointed chairman on the departure of Mr. Szarvasy to America.

Birsco Limited

A new company, Birsco Limited, has been formed to take over the business of the British Indiarubber Sponge Co., Limited, worked by J. Carroll and A. Mallaby at Bradford, Yorkshire. The registered office of the new company will be at 27 Bridge street, Southampton, and R. D. and A. Comrie, of the firm of Alexander Comrie & Sons, of that town, are to be permanent directors. The capital is £10,000 in 9,000 ordinary shares of £1 each and 20,000 deferred shares of 1*s*. each. Presumably the works will be continued at Bradford, being controlled by the new Southampton interests. Mr. Mallaby is a rubber man of some versatility and a few years ago set himself to the test of evolving a rubber sponge when there was not so much knowledge available on the subject as there is today. Naturally the unburstable ball followed.

Financial Notes

Callender's Cable & Construction Co., had a good year in 1921, largely due to the fact that important contracts had been secured before the slump in trade set in. The profit was £217,012, against £182,920 in 1920. The ordinary dividend is maintained at 15 per cent and £150,113 is carried forward against £108,101 the previous

year. At the meeting the chairman announced that although substantial business is now being done it is by no means of the volume of a year ago and the future depends a good deal upon effective international agreements being reached, their foreign trade being of great importance.

Siemens Bros., Limited, also an electrical concern, although paying 10 per cent on the ordinary shares, showed considerable evidence of the slump in trade in the volume of orders received.

Johnson & Phillips, Limited, had a bad year and has disappointed its shareholders in passing the dividend. Last year 12½ per cent was paid, but the engineering strike appears to have had a bad effect. The profits amounted to £42,700, against £98,400. After providing for interest, etc., and a maintenance reserve of £16,000, the carry forward is £15,000. Compared with so many of the regular rubber works where heavy losses have been incurred, a reduction of the profits by rather more than 50 per cent does not seem so bad. It is only because cable making firms generally have shown such good returns during the trade depression that Johnson & Phillips results have caused such surprise.

The ordinary shares of the Dunlop Rubber Co., Limited, which have been standing at 8*s*. 6*d*. for some time, rose to 9*s*. 6*d*. shortly after the appointment of Sir Eric Geddes to the board. This represents an appreciation of £750,000, a large sum in itself, but in reality not much towards the deficit of 8½ millions sterling which it is foolish to suppose can be got rid of at once. The justification of the rise in price will depend upon what special steps are to be taken to deal with the deficit.

The Rubber Trade in Europe

By Our Regular Correspondent

France

The Société des Pneumatiques et Caoutchoucs Goodyear has been formed in Paris to manufacture and sell tires, rims, and all articles connected with the rubber industry.

The Société Française de Joints et de Caoutchouc had been sequestered at the beginning of the war because of its Hungarian ownership. The Campagnie Générale d'Electricité, having acquired all the stock of the Hungarian shareholders, has control of the Société Le Joint Français, as it is now known.

Strong protest is being made by those interested in the rubber industry in France against the proposal of M. Outrey for a tax of 2 francs per kilo on all foreign crude rubber imports. In 1919 a measure to put a duty of 1.50 francs on foreign crude rubber, also put forward by M. Outrey, was rejected and it is expected that the present proposal will not be successful.

Germany

The reports of different German concerns indicate extreme business and factory activity, big turnovers and large dividends, surprising evidence of prosperity which contrast forcibly with conditions in many other countries.

Many important business heads, however, assert that things are really all wrong. There is nothing reliable or stable any more. The mark rises and falls a dozen times in as many days; prices of raw and manufactured articles change over night; goods are delivered without regard to time or quality; companies increase their capital frequently, often doubling and sometimes trebling it within the year; increasing wages, strikes and new government ordinances are the order of the day.

Soaring Prices

Meanwhile prices continue to soar. A further 15 per cent has been added to rubber coats and technical goods, while the Association for Surgical Goods and Druggists' Sundries has announced higher prices after June 1. A comparison of rubber and balata prices is a revelation. On August 27, 1921, first latex crêpe was 25 to 27 marks; ribbed smoked sheets 24 to 26 marks; hard fine Pará 36-37½ marks; No. 1 balata sheet 120-130; and Panama and Colombia block balata 65-85 marks. On May 20, 1922, the quotations were: first latex crêpe 100-110 marks; ribbed smoked sheet 100-105 marks; hard fine Pará 125-135 marks; No. 1 balata sheet 425-475 marks; Panama and Colombia block balata 175-335 marks. American cotton of the "fully middling" grade was 115.40 marks per kilo on April 21, 1922, and on May 19 it had risen to 147.20 marks per kilo.

Germany and Russia

In looking for new markets, Germans naturally turn to their big next door neighbor, Russia, which in former times had been so good a customer. Rubber trade papers frequently discuss Russian conditions and ways and means of getting a foothold there. Aside from questions of payment, the great obstacle to trade between the two countries is the lack of transportation facilities in Russia. Many industries are unable to distribute their goods where needed and therefore suffer from overproduction. On the other hand, despite the flood of paper currency there is no money with which to buy even daily necessities.

Export and Import Duties

The export duty on all rubber manufactures has been reduced from 6 to 2 per cent. Regenerated rubber is now duty free. A duty of 2 per cent is leviable on all imports except those appearing on the free list which includes gutta percha, rubber and balata, raw and refined; regenerated rubber and waste and old rubber, gutta percha and balata.

New Goods

Apparently Germany is not exempt from holdups, as Albert Ziegler, Giengen am Brenz, Würtemberg, has devised a weapon consisting of a rubber ball weighing about three-quarters of a pound and having a diameter of about 2 inches. This ball is attached to a leather strap and can easily be carried in the pocket.

Bathing caps, hats, bibs, children's pinafores, little hand-bags, serviettes, etc., are being made of thin sheet rubber in different colors and with decorations of colored flowers, stars, groups of children and animals. Pure rubber sheeting in brown, gray, pink and white, bound with fine white material and provided with loops for attaching to the edge of the bed, is also appearing on the market.

Austria

The "Semperit," Oesterreich-Amerikan Gummiwerke, Aktiengesellschäft, reports a gross business turnover for 1921 of 476,708,871.01 kronen and net profits of 60,977,705.82 kronen. This together with 349,774.68 kronen carried forward from 1920 brings the total net profits to 61,327,480.50 kronen. The capital of the company at present is 50,000,000 kronen. The nominal value of the stock will be changed to 1000 kronen instead of 200 kronen.

Russia

Im-und Export states that a new rubber trust was formed in January, 1922, and consists of the six chief rubber factories in Russia. Of these, four are working, but two of the three Prowodnik factories are not operating. During the last three months of 1921 the output was 20 per cent, and during the first two months under the trust, 31 per cent of the output in 1916. Compared with 1913 the output under trust management was 10 per cent in the case of footwear, 200 per cent in tires and 50 per cent in technical goods. In February 8,700 persons were employed in the factories that were working and 230 in those that had not yet resumed activities.

At its formation the trust received cash, raw materials, and fuel to a value of 17,818,606 gold rubles. However, if the 1922 program is to be carried out 27,558,740 gold rubles will be needed. So far the turnover has been: for January, 1922, 606,473 gold rubles; for February, 1,323,584 gold rubles. (Value of a gold ruble is about $0.50.)

At the present rate of production crude rubber stocks will last

5 months. The difficulty will be to get new supplies which must be paid for in gold rubles or in foreign currency. The trust had set aside a certain sum in gold for this purpose but this amount was cut to a third as the Soviet Government finally stated that it would pay in paper money only.

Foreign Tariffs

British Honduras

The duty on chicle exported from British Honduras has been decreased from 3 cents to 1½ cents a pound by a recent ordinance, effective April 22. The new duty applies equally to chicle produced in the Colony and to that shipped in transit through the Colony.

British India

Revised customs duties of British India, effective April 1, 1922, include the following:

No.	Names of Articles	Per	Tariff Valuation	Duty Per Cent
118	Packing—engine and boiler—all sorts	per gross of boxes	Ad valorem	15
121	Pneumatic rubber tires and tubes for motor cars, motor lorries, motor cycles, motor scooters, bicycles and tricycles.*	.....	Ad valorem	30
126	Rubber tires and other manufactures of rubber, not otherwise specified (see No. 121)	.....	Ad valorem	15

*Under Government of India Notification No. 1776, dated April 1, 1922, pneumatic rubber tires and tubes for bicycles and tricycles are liable to duty at 15 per cent.

Canada

Changes in Canadian import duties and internal taxes which became operative May 24 represent, in general, reductions from the present duties, ranging from 2½ to 7½ per cent. Those alterations which affect the rubber industry are as follows:

Tariff Items	Articles	General Rates Unchanged Per Cent	Preferential Rates Former Per Cent	Preferential Rates New Per Cent
575	Elastic, round or flat; garter elastic	35	25	25
611a	Boots, shoes, slippers, and insoles of any material, n. o. p. f.	30	20	17½
619	India rubber clothing and clothing made waterproof with india rubber; rubber or gutta percha hose, and cotton or linen hose lined with rubber; rubber mats or matting and rubber packing	35	22½	20

Colombia

A bill, said to be merely temporary, and which proposes to increase the country's customs duties, postage, and stamp taxes, has been introduced in the Colombian House of Representatives. The present import duties are to be increased except for certain commodities by varying surcharges. Under the heading, "Twenty-five Per Cent of the Duty," are mentioned rubber and manufactures thereof (except tires and hose).

Czecho-Slovakia

While the new customs tariff of Czecho-Slovakia, effective January 1, 1922, has not been changed, the coefficients in general have been greatly increased. The duty to be paid is calculated in all cases in such a manner that the original or fundamental duty is multiplied by the corresponding coefficient. Items which concern the rubber industry include:

Tariff Number	Designation of Ware	Original Duty in Kronen for 100 Kilograms	Coefficient New	Coefficient Old
320 e2	Casings and air tubes for automobiles and motor cycles	150	20	16
445	Sheet Ware:			
	Pressed or stamped sheet ware, like wheels, rims, tires for automobile factories with special allowance under special conditions	...	5	...

Germany

The duties on articles imported into Germany have been greatly increased, as the result of a law which became effective May 1. The rates of duty, for the most part double those previously in force, throughout the regulations are expressed in gold marks, and when duties are paid in paper currency 60 paper marks must be paid for each gold mark. The following items are of interest:

Tariff No.	Category V (H).—Clothing, Millinery, and Other Sewn Articles of Textile Wares or Felt, not Elsewhere Mentioned. Articles	Rates of Import Duty in Gold Marks: Former 100 kg.	Present 100 kg.
522	Of spun wares, as well as of felt, coated or impregnated with india rubber, or made with internal layers of india rubber, or in combination with india rubber threads; also of tissues of india rubber threads in combination with yarn, not otherwise mentioned—if the spun wares or yarn consist:		
	Wholly or partly of silk	220	440
	Of other textile materials	120	240
533	Men's hats of spun wares however trimmed, including those coated or impregnated with india rubber ....each	0.50	1
535	Ladies' hats of spun wares, including those coated or impregnated with india rubber:		
	Not trimmed ....each	0.25	0.50
	Trimmed ....each	0.80	1.60
	ex Category VII (A).—Wares of Soft India Rubber		
ex574	India rubber tubing:		
	For tires of vehicle wheels	60	120
	Other kinds (not including stalks for artificial flowers); india rubber tubing with an underlayer of vegetable textile materials; tubing of vegetable textile materials impregnated or coated with india rubber or with internal layers of india rubber; tubing of india rubber plaited or wound round with yarn—all these, whether combined or not with common metals or alloys thereof	40	80
576	Wagon covers, manufactured, of coarse textile wares impregnated or coated with india rubber, or with internal layers of india rubber	30	60
577	Footwear of india rubber, with or without soles of other materials:		
	Unvarnished	70	140
	Varnished	100	200
578	India rubber tires for wheels of vehicles; also covers for the same, of textile wares impregnated or coated with india rubber or with internal layers of india rubber	60	120

Mesopotamia

Effective April 3, 1922, the duties on certain products imported into Mesopotamia have been increased from 15 per cent to 20 per cent ad valorem. Pneumatic tires and tubes were mentioned in the list of goods affected by the new regulations.

Spain

The revised Spanish customs tariff of February 13, 1922, which was stated to be merely provisional, is now said to be final, and effective for a period of five years. One of the items states in regard to import duties that rubber, gutta percha and the like which is vulcanized, and in threads up to 2 mm. thick, now have a duty of only 1.25 pesetas per 100 kilos, whereas formerly the tax for a similar weight was 2 pesetas.

Spanish Possessions in the Gulf of Guinea

Among the new import and export duties for the Spanish Possessions in the Gulf of Guinea the following item was noted as included in export duty tariffs: rubber, per 100 kilograms, as exported to Spanish ports, has a duty of 10 pesetas (one peseta equals $0.195 normal United States currency); when exported to treaty countries the tax is, also per 100 kilograms, estimated at 15 pesetas; and for non-treaty countries, 30 pesetas.

THE COMPAGNIE GÉNÉRALE INDUSTRIELLE BELGO-POLONAISE HAS been formed in Brussels, Belgium, for the manufacture of high and low tension conductors, hard and soft rubber for various uses, etc., and is capitalized at 250,000 francs.

The Rubber Trade in the Far East

By Our Regular Correspondent

Malaya

Rubber Goods Made in Malaya

BRIEF mention was made of the rubber section at the Malaya-Borneo Exhibition in the June number of THE INDIA RUBBER WORLD. In view of the interest centering on the efforts of Malaya in the way of manufacturing rubber, some details regarding the exhibits follow.

Apart from displays connected with the Peachey and the Schidrowitz processes, there was an exhibit of a process for vulcanizing direct from latex, the invention of a local chemist, Mr. Laub. Certain fine powders when added to the latex cause it to coagulate very rapidly so that fillers and sulphur can be added to the latex which coagulates quickly, and when dried is vulcanized. Some of the samples made according to the Laub process were latex pans, tanks lined with vulcanite and acid-proof vulcanite partitions, vulcanite lining for concrete drains, soles and heels.

The Federated Malay States Rubber Co. had on view rubber mats and shoes made from colored crêpes in which pigments had been added to the latex before coagulation.

There was a display of the application of crude rubber to the exterior of piles used in the harbor, the idea being that the rubber might protect the piles from attacks of teredos.

An application of rubber to road surfaces, patented as "Durynoid," and canvas treated with rubber paint prepared under a local process, also claimed attention.

The Singapore Rubber Works had a rubber pavement at the main entrance of the exhibition, made of Cresson's patent terra caoutchouc blocks. The same firm also showed perforated rubber mats. A new use for rubber was demonstrated by a model of a rubber tennis court made of patent paving blocks capped with green rubber, the court markings being inlaid in white rubber.

Company Reports

The Golden Hope Rubber Estate for the first time since its inception reported a loss. This amounted to £4,962 and, deducted from £8,811 brought in, left £3,849 to be carried forward. During the past year tapping had been suspended on the Golden Hope Estate for five months, operations continuing only on the Reading Estate. As a result the crop harvested amounted to only 233,446 pounds against 461,824 pounds during the previous year. Average net sale price, including estimated value of the unsold portion, was 7.68*d*. per pound, this against costs of 10.08*d*. per pound on Reading Estate and 1*s*. 1.37*d*. per pound on Golden Hope Estate.

Pegoh Limited is in the enviable position of showing a profit on rubber despite the slump. The value of rubber sold and in stock fell by £58,000, but this was offset by a reduction in costs of £24,500. The crop was 527,110 pounds—less than half that of the previous year—and the average price obtained 1*s*. 7.55*d*. per pound or 3.3*d*. per pound less than the year before. Profits amounted to £7,256 against £30,000. Last year £10,000 had been put under special reserve account and it was proposed to bring this account up to £30,000 this year. The company has two estates, the Rumbia division consisting of 1,457 acres of which 1,411 acres are planted and 952 mature, and the Pegoh division covering 3,316 acres of which 2,539 acres are devoted to rubber. All of this rubber except 278 acres is mature.

Netherlands East Indies

Bud Grafting

The work of L. Tas of Pasir Waringin in connection with bud grafting has been followed with much interest, and at the repeated requests of many he has finally published his methods and experiences. On the whole the method is the same as that followed by Mr. Donkersloot and described in THE INDIA RUBBER WORLD, May 1, 1922. Mr. Tas makes some interesting points which will be briefly told.

After mother trees had been carefully observed for three years, bud grafting was begun after it had been found that this method of vegetative reproduction was most successful. In fact Mr. Tas records 100 per cent of success with bud grafting. A plantation was laid out in such a manner that all descendants of one mother tree were placed together on one plot. In this way ample means of comparison was afforded.

Mr. Tas considers that buddings may be examined as early as 14 days after they have been placed, and in case of failure the process of grafting may be repeated three times at the same height of the stock.

As the number of mother trees on an estate that fulfils all requirements is comparatively small, and it is expected in the future there will be a big demand for budding material, a method is described for securing a quantity of material in the shortest time.

From a single mother tree it is possible to obtain 500 vegetative descendants by bud grafting. These should be planted deep. When the bark of the shoots is brown, these are ringed at a given height, the cambium is scraped and the hollow around the plant filled in even with the ground. After 20 to 30 days this filling is carefully opened. If roots are reached, the shoot with the roots is carefully cut off. Soon new shoots will form and the following year the same process can be repeated on two or three branches of the original buddings.

Another interesting point is that not only could young plantations of one to two years old be budded, but in older gardens this method could be used to form new crowns. The procedure would be as follows: At a distance of three meters from the ground on the straight trunk or branch, one or more buddings are placed. When these succeed, great care must be taken to remove all shoots but those from the buddings. The advantage of these crowns would be that they could profitably be used for obtaining seed and for the supply of budding material.

The buddings at Pasir Waringin were 2½ years old at the time Mr. Tas wrote his pamphlet, and at that time they had grown to a height of 6 meters. The average girth at a height of 1 m. from the place where budding and stock meet was 24.5 cm.

Soon after their formation the similarity of the leaves on all descendants of one mother tree could be noticed. The seeds produced by all the buddings from one tree were also identical with those from the original tree. Buddings from trees giving yellow latex also yielded yellow latex even when the stock produced normal white latex, which confirms Dr. Bobilioff's theory that latex is formed locally. This also proves the incorrectness of the idea that the latex in the trunk originates chiefly in the roots.

The Rubber Situation

An article by Th. A. de Neve of Pontianak, Dutch Borneo, calls for attention, as he considers the question of native and Chinese production of rubber to be much more serious in its effect on European producers than has yet been thought the case.

He begins by telling Java and Ceylon planters who are against restriction or any kind of government intervention that they, being in a minority, ought not to run away with the idea that because they could produce cheaply, they need not support any protective measures advocated by Malaya. For the conditions

under which tens of thousands of acres of rubber land are being worked by the natives, Chinese, and Japanese in Malaya, Borneo and Sumatra were such as to constitute a menace even against Java and Ceylon.

In Borneo, Djambi and other parts, large areas belong to the natives and there is nothing to prevent them from planting rubber on their fields after their rice has been harvested. Their extra exploitation costs are nil, as they lay out new rice fields each year anyway. They have the choice of the best land, the climate is ideal for Hevea which grows rapidly and seems indestructible in these regions. There are no laws, taxes, cesses, etc., to hamper the native, as exist for the European planter. There are no extra costs for labor as all the work is done by members of the family. However, where outside help is needed this is paid in rice from the ricefield and a portion of the daily rubber yield, sometimes half and sometimes even two-thirds!

At present most of the native planters have stopped tapping, not because rubber did not pay them—they will sell at any price—but because the Chinese money lenders in their own interests have stopped buying and the natives consequently cannot get rid of their product. In spite of this the rubber plantings are steadily being extended and as soon as speculation in the market is possible again, the Chinese will come and buy rubber from the natives as usual.

When the natives first began planting rubber, most people thought nothing would come of their efforts. But experience has taught them and the condition of the market has forced them to improve the quality of their rubber. They have even erected modern cooperative factories; one of these is at Pontianak.

Mr. de Neve is of opinion that it is only a question of time before the production of rubber, like that of coconuts, sago, gambir, pepper and pinang, will be practically entirely in the hands of the natives because they produce so cheaply.

A contrast in tone is shown by an article in another local paper where government intervention is advised against. The writer of this article considers that the worst of the slump is over. The greater part of the surplus stocks has been taken up, production has been decreased, new uses for rubber are being devised. Slowly the market is tending to become firm, and when once it is firm, the time will not be far off when prices will rise. They will never soar to old-time heights, and many ups and downs are still in store for the planter. However, experience will have the desired effect and by degrees the market will become stable. When the relation between consumption and production is normal again, bigger profits will be obtained by producing rubber cheaply and at the same time of perfect quality.

The Davidson Process

Ir. Hartjens gave the following information at the meeting of the Malang Agricultural Association regarding the process according to which, it is claimed, perfectly dry rubber is obtained from the latex in 25 minutes.

The latex is preserved with a secret preparation, "Siroxidine," and coagulated with a secret coagulant in a kind of churning machine. This takes place rapidly. The coagulum is then transferred to a machine where the serum and water are withdrawn. This treatment yields a sheet of coagulum somewhat thicker than the usual printed sheet. About 50 to 60 per cent of the moisture is thus squeezed out. The coagulum is then cooked for five minutes in order to remove the greater part of the acid. After this it is passed through the sheeting machine and then dipped into a warm alkaline bath.

The sheet next goes into the triplex machine which consists of three rolls all turning in the same direction. Under increasing pressure the rubber is here rolled from a ribbon into sausage form, after which it is bound with stout material and hung up for two or three days. The next step is the removal of the cloth, which is supposed to have taken up all the remaining moisture, disclosing a yellowy white sausage.

The Netherland East Indies Rubber Association

At a recent meeting of the above association certain changes were made in the rules regarding contracts and grading.

A modification of article 9 of the standard contract aims to make it clear that 20 per cent of the off grades and lower grades of a parcel offered must be opened for inspection.

In the rulings regarding grading a new article, 8A, has been added which empowers the secretary to make a declaration, on demand of the shipper, that the lots were free from mold at the time of shipping.

The cost of the declaration is 1 gilder per ton with a minimum of 10 gilders. (A gilder equals $0.40.) This article has been framed in connection with the possibility of insuring rubber against moldiness when shipments are made.

The term "Batavia Standard Quality" has been changed to "Java Standard Quality."

The costs of the Arbitration Certificate have been reduced to 10 gilders a ton with a minimum of 100 gilders.

MICROSTRUCTURE OF ONAZOTE

The multiple structure of rubber resulting through expansion by high gas pressure and heat vulcanization is shown in the accompanying microphotographs. Fig. 1 illustrates the structure

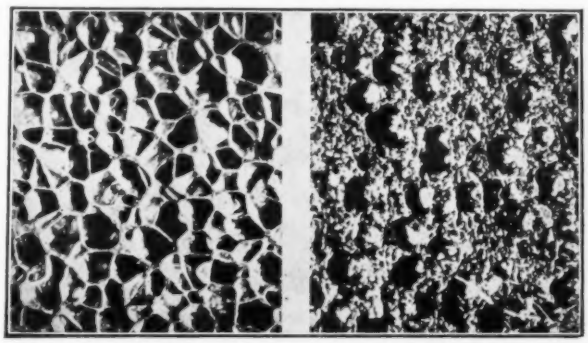


Fig. 1 Fig. 2

Plantation Rubber Expanded by Heat and Gas Pressure—Magnified 300 Times.

of plantation rubber after expansion at a certain heat and gas pressure, while Fig. 2 shows exactly the same article expanded at a still higher heat and gas pressure.

The structure is a honeycomb formation in the first instance and distinctly multiplex in the second. The latter structure is obtained by continuous expansion in a compound manner.

The views show the commercial development of onazote for thermoconductivity purposes, and each structural stage has well defined properties.—Charles L. Marshall in *The Bulletin of the Rubber Growers' Association*, May, 1922.

MEXICAN COMMERCIAL EXPOSITION

The second International Commercial Exposition, to be held in Mexico City, Mexico, from August 15 to September 15, 1922, is endorsed by the National Confederation of Chambers of Commerce of Mexico and all commercial chambers of that country including the American Chamber of Commerce of Mexico City, and also by the Mexican Chamber of Commerce of the United States, Inc. In view of the fact that Mexico has in recent years proved to be one of our best customers, this exposition will undoubtedly attract the attention of American industrial interests.

Recent Patents Relating to Rubber

The United States

Issued* May 9, 1922

NO. 1,415,030 Garter. E. S. Hersperger, Washington, D. C.
1,415,280 Pneumatic tire casing reinforced with wire helices anchored at beads. A. E. Wale, Coleshill, assignor to A. E. Harris, Leamington, and F. H. Jones, Islington, London—all in Eng.
1,415,283 Inner tube. H. N. Wayne, Washington, D. C.
1,415,407 Tire valve. M. C. Schweinert, New York, N. Y., and H. P. Kraft, Ridgewood, N. J.
1,415,604 Pneumatic tire. W. W. Moore, Spokane, Wash.
1,415,718 Fountain pen. F. E. Sharah y Cantos, Tacloban, P. I.
1,415,757 Corset with crossed elastic bands at top. A. Zwiebelson, New York, N. Y.
1,415,844 Noise reducing typewriter platen with soft rubber core. W. R. Mulock, Winnipeg, Man., Can.

Issued* May 16, 1922

1,415,991 Vehicle wheel with pneumatic tube between inner and outer concentric rims. H. F. Cleeve, assignor of ½ to W. J. Billings—both of Jamaica, N. Y.
1,416,044 Dress shield, single flap type, with straight upper edge. A. Martin, New York, N. Y.
1,416,049 Punctureproof tire. E. J. Moran, Chicago, Ill.
1,416,187 Tire flap. J. R. Gammeter, Akron, O., assignor to The B. F. Goodrich Co., New York, N. Y.
1,416,252 Pneumatic tire. H. S. Blynt, Yale, Okla.
1,416,253 Pneumatic tire. J. Bobek, Treverton, Pa.
1,416,279 Resilient heel. E. Fuzessery, Akron, O.
1,416,302 Fountain pen. O. Mitchell, Brookline, Mass.
1,416,303 Semisolid vehicle tire with cushion chambers. W. C. Peck, Naugatuck, Conn.
1,416,373 Cushion wheel construction. J. J. Morand, assignor to Morand Cushion Wheel Co., Chicago, Ill.
1,416,400 Hose and method of making. N. S. Dodge, Emeryville, Calif.
1,416,523 Inflatable life preserver with rigid end walls. J. Strobel, New York, N. Y.
1,416,609 Garment supporter. H. V. Clausen, New York, N. Y.
1,416,650 Hose supporter. N. M. Lancaster, Palatka, Fla.

Issued* May 23, 1922

1,416,866 Hose supporter. J. Patterson, Jr., Aldershot, Eng.
1,416,873 Automobile and motorcycle tire. G. W. Ray, Atlantic City, N. J.
1,416,917 Inner liner for tires. H. N. Wayne, Washington, D. C.
1,417,008 Resilient wheel equipment and method of construction. J. S. Williams, Riverton, N. J.
1,417,051 Tire. A. L. Freedlander and W. G. Goodwin, assignors to The Dayton Rubber Manufacturing Co., Dayton, O.
1,417,100 Waterproof hat protector. B. Newman, New York, N. Y.
1,417,152 Road vehicle wheel with detachable rim for pneumatic tires. W. Dukes, assignor to The Warland Dual Rim Co., Limited, Coventry, Warwick, Eng.
1,417,168 Low pressure alarm for pneumatic tires. W. A. Harris, assignor to Harris Accessory Co., Greenville, S. C.
1,417,240 Wringer roller combining a metallic core and three covering layers of rubber, the center one of the three being sponge rubber. Kinsuke Fukuda, Yokohama, Japan.
1,417,275 Reversible interchangeable rubber heel. J. W. Meyers, Elyria, O.
1,417,311 Pneumatic or cushion vehicle wheel. H. L. Flesher, Riley, Ind.
1,417,383 Pneumatic tire tube. O. J. Humphrey, Elyria, O.

Issued* May 30, 1922

1,417,517 Ventilated shoe. J. Hajek, Follansbee, W. Va.
1,417,642 Combination fountain pen and pencil. A. R. Tallman, Nashville, Tenn.
1,417,934 Elastic heel protector for ladies' shoes. F. E. Miller, Sparta, Ill.
1,418,019 Bath brush of rubber, designed to contain cake of soap. S. C. Pearson, New York, N. Y.
1,418,217 Match holder for hats. J. L. Warner, Phoenix, Ariz.
1,418,220 Golf ball. J. White, Sunningdale, Eng.

*Under Rule No. 167 of the United States Patent Office, the issue closes weekly on Thursday, and the patents of that issue bear date as of the fourth Tuesday thereafter.

The Dominion of Canada

Granted May 2, 1922

218,141 Pneumatic tire. G. Hofman, Chicago, Ill., U. S. A.
218,160 Rubber band tire. E. B. Killen, London, E. C. 4, Eng.
218,187 Rubber heel. S. Petegorsky, Ottawa, Ontario.
218,290 Ground gripper detachable tire tread. E. Erik and E. I. Quick, assignee of ½ interest—both of Ossining, New York, U. S. A.

Granted May 9, 1922

218,364 Pneumatic tire. E. B. Killen, London, E. C. 4, Eng.
218,385 Cap for tire valves. G. F. Powell, Toronto, Ontario.
218,396 Abdominal support with elastic inserts. M. E. Wagner, Atchison, Kans., U. S. A.
218,403 Clincher tire. W. B. Wiegand, Montreal, Quebec.
218,437 Toy airship. B. B. Keith, Mansfield, Ohio, U. S. A.
218,469 Sound producer consisting of a sealed inflated elastic body acted on electrically. The Canadian Radio Corporation, Limited, Toronto, Ontario, assignee of L. de Forest, New York, New York, U. S. A.
218,486 Golf ball. The B. F. Goodrich Co., New York, N. Y., assignee of W. C. Geer, Akron, O.—both in the U. S. A.
218,492 Cord tire fabric. The Jenckes Spinning Co., assignee of F. C. Hall—both of Pawtucket, Rhode Island, U. S. A.
218,503 Teat cup lining. The Universal Milking Machine Co., assignee of J. A. Schmitt—both of Columbus, Ohio, U. S. A.
218,523 Tire casing. R. Teeter, Toronto, Ontario, assignee of C. W. Miegel, Jersey City, New Jersey, U. S. A.

Granted May 16, 1922

218,619 Rubber bulb for pneumatic warning horns. J. F. Smith,, Birmingham, Eng.
218,626 Compressed air auto cushion. W. F. Swartz, Pembroke, Ontario.

Granted May 23, 1922

218,753 Antiskid tire. J. Briggs, Esholt, York, Eng.
218,784 Protective tread for pneumatic tires. W. J. Fraser, Toronto, Ontario.
218,856 Resilient tire. W. L. von Edelkrantz, Mexico, Mexico.
218,918 Dirigible balloon. The Goodyear Tire & Rubber Co., assignee of R. H. Upson—both of Akron, Ohio, U. S. A.
218,919 Kite balloon. The Goodyear Tire & Rubber Co., assignee of R. H. Upson—both of Akron, Ohio, U. S. A.

Granted May 30, 1922

219,008 Tire. J. H. Christian, Detroit, Mich., U. S. A.
219,023 Garment protector. M. S. George, St. Louis, Mo., U. S. A.
219,041 Brassiere with elastic back. E. A. Lindemann, New York, New York, U. S. A.
219,044 Bottle holder of elastic. F. J. Mahoney, Edgewater, New Jersey, U. S. A.
219,177 Douche. E. O'Connor, Newark, New Jersey, U. S. A.
219,187 Pneumatic tire valve. H. A. Wood, Kingston, Ontario.

The United Kingdom

Published May 3, 1922

176,389 Fountain pens. J. Salmon, 8 rue Cadet, Paris, France.
176,444 Pneumatic tire pressure gage. I. Pulverman, Exchange Hotel, Warren, Pa., U. S. A.
176,482 Rubber tire for use on a tractor or other wheel to adapt it for use on roads. L. Brown and C. Macintosh & Co., Ltd., Cambridge street, Manchester.
176,552 Foot warmers. R. Howarth, Falkland Lodge, Falkland Road, Torquay.
176,595 Countersunk rubber tips for heels. G. H. Coldwell, Moorbottom, Honley, Huddersfield.
176,604 Reservoir pens. F. T. O'Hanlon, 99 Kingsley Road, Liverpool.
176,663 Waterproof caps for shipwrecked persons, carrying an electric torch. W. Williams, 13 David street, Penmaenmawr, Carnarvonshire.
176,725 Golfer's sleeveless raincoat with cape. H. Sommerlad, 3 Wellington Road, Watford, Hertfordshire.
176,745 Fabric for gland packings, hose piping, pneumatic tires and belting. A. R. Trist, 12 Clipstone street, London.
176,789 Vaginal irrigator. F. C. Beck, 1 Marktgasse, Winterthur, Switzerland. (Not yet accepted.)

Published May 10, 1922

176,807 Sectional core tire. D. Maggiora, Villa Le Fontanelle, Careggi, Florence, Italy. (Not yet accepted.)
176,854 Construction of revoluble heel pad. J. MacQuinn, 84 Ashridge street, Runcorn, Cheshire.
176,884 Tire tread construction. P. Chick, Market Square, Highworth, Wiltshire.
176,950 Inflatable swimming device. A. E. White, 88 Chancery Lane, London; I. B. Kleinert Rubber Co., 725 Broadway, New York, New York, U. S. A.
177,005 Garter. E. M. Harrison, 33 Lloyd street, Llandudno, Carnarvonshire.

Chemical Patents will be found on page 680. Machinery Patents on pages 685-686.

177,023 Garter. F. Bouillot, 123 Rue Armand Silvestre, Beconles-Bruyeres, and G. Leighton, 7 Rue Thorell, Paris—both in France.

177,077 Rubber sole pads for boots. F. Hawkins, 51 Goodnestone Road, Sittingbourne, Kent.

177,101 Revolving rubber heel pad with cone-shaped projections. A. Bulbick, 76 The Crescent, Eastleigh, Hampshire.

Published May 17, 1922

177,222 Corsets with elastic hip sections. Waterhouse, Reynolds & Co., Ltd., 7 Upper Brown street, and F. Cox, 9 Newtown street—both in Leicester.

177,228 Tread for solid or pneumatic tires. H. Garner, Avalon, Wake Green Road; J. P. Garner, 37 Forest Road—both of Moseley, Birmingham, and S. Smith, 7 Oxford Road, Cunnersbury, London.

177,295 Nipple shield. E. A. B. Kilner, Nursing Home, Perrymount Road, Hayward's Heath, Sussex.

177,314 Rubber insulating foot with glass insert for phonographs. W. H. Prickett, 46 Yard avenue, Trenton, New Jersey, U. S. A.

177,333 Wheel tire with rubber blocks secured to steel base plates. G. Fornaca, 7 Via Giannone, Turin, Italy.

177,388 Wired edges of a tire cover reinforced by a band or seam of canvas or like material vulcanized to the canvas foundation. J. Spyker, 1b Sarphatistraat, Amsterdam, Holland.

177,448 Tire patch. S. C. Caddy, 205 Richmond Road, Kingston, Surrey.

177,449 Compression inner tube. B. G. Goble, 1435 South Cheyenne street, Tulsa, Okla., U. S. A.

177,450 Compression inner tube. B. G. Goble, 1435 South Cheyenne street, Tulsa, Okla., U. S. A.

177,451 Compression inner tube. B. G. Goble, 1435 South Cheyenne street, Tulsa, Okla., U. S. A.

177,473 Rubber tube to act as an air-vent in filling hot water bottles. A. F. Dufton, Trinity College, Cambridge.

Published May 24, 1922

177,592 Pneumatic tire. C. Burnett, Sunnybank, Trowbridge, Wiltshire.

177,604 Eraser. E. Amies, 46 Priory Road, Bedford Park, London.

177,605 Sock-suspender. P. Seelig, Kastanienbaum, Lucerne, Switzerland.

177,673 Chin strap to remedy double chin. M. Hall, 2 Holbeach House, 24 Nassau street, London.

177,707 Puncture-closing repair device. P. T. Coffield, 920 South Third avenue, Tucson, Ariz., U. S. A.

177,745 Children's safety harness. W. H. Smith, G. H. Haden, and J. A. Pennell—all of Central Works, Upper Bridge street, Walsall.

177,750 Veil having an elastic thread run therein. R. Shaw, Peveril Works, Peveril street, Nottingham.

New Zealand

Issued April 20, 1922

47,335 Pneumatic boot tree. T. Taylor, Duke street, Cambridge, N. Z.

47,488 Tire display hanger bracket. R. Edwards, Herschell street, Napier, N. Z.

Germany

Patents Issued, with Dates of Issue

354,509 (April 5, 1921). Exchangeable rubber patch for shoe heels. Johannes Wulff, Martinstrasse 9, Schwerin.

354,652 (May 18, 1920). Syringe for medical purposes. Adolf Pochwadt, Steglitzerstrasse 18, Berlin.

354,653 (October 20, 1920). Syringe for medical purposes. Adolf Pochwadt, Steglitzerstrasse 18, Berlin.

354,677 (March 15, 1921). Rubber heel. Otto Maser, Costritz, near Dresden.

355,007 (August 2, 1921). Non-skid device for truck wheels with twin tires. August Diener, Günderodestrasse 5, and Ludwig Daschmann, Frankenallee 91, Frankfort-on-the-Main.

355,254 (January 18, 1921). Atomizer for inhaling medicines. Dr. Ernest Schubert, Herzog-Wilhelmstrasse 21, Munich, and Mischa Zolotnitzky, Obernigk, near Breslau.

355,255 (January 18, 1921). Device for spraying inhaling medicines. Dr. Ernest Schubert, Herzog-Wilhelmstrasse 21, Munich, and Mischa Zolotnitzky, Obernigk, near Breslau.

355,323 (November 17, 1920). Irrigator. Max Luchow, Finsterwalde, N.-L.

355,411 (October 15, 1920). Hemorrhoidal pessary. Dr. Rudolf Gärtner, Siegfriedstrasse 24, Worms-on-the-Rhine.

355,416 (March 9, 1921). Electrical vibro-inhaling apparatus. Artur Duffek, Prague, Czecho-Slovakia; represented by Paul Müller, Berlin, S. W. 11.

355,461 (January 5, 1921). Rubber heel. Stefan Breite, Freigut Troischau bei Rosswein, Saxony.

355,464 (April 23, 1921). Holder for gumming on rubber heels. Otto Müller, Tauchaerstrasse 28, Leipzig.

355,551 (May 30, 1921). Fountain syringe. Otto Koulen, Zürich, Switzerland; represented by E. Hutmacher, Uhlandstrasse 81, Berlin.

355,612 (October 24, 1920). Rubber sucker for artificial teeth. Hans Wetzler, Geleitstrasse 14, Offenbach-am-Main.

355,699 (September 5, 1916). Tire. Reinhold Gollert, Kniephofstrasse 48, Berlin-Steglitz.

355,759 (August 17, 1920). Atomizer. Michael Riedel, Landgrabenstrasse 17, Nuremburg.

355,942 (August 7, 1919). Pessary. Dr. Julius Frankenstein, Kaiser Wilhelm-platz 5, Berlin-Schöneberg.

355,943 (August 14, 1920). Pessary. Dr. Julius Frankenstein, Kaiser Wilhelm-platz 5, Berlin-Schöneberg.

355,944 (October 24, 1920). Pessary. Dr. Julius Frankenstein, Kaiser-Wilhelm-platz 5, Berlin-Schöneberg.

355,945 (April 29, 1921). Syringe for medical purposes. Adolf Pochwadt, Steglitzerstrasse 18, Berlin.

356,032 (November 5, 1921). Inlay for pneumatic tires. Franz Thanner, Garmisch-Partenkirchen.

356,043 (May 23, 1920). Rubber tread for shoe heels and soles. John Brandwood, Brandlesholme, Bury, Lancaster, England; represented by Dr. B. Alexander-Katz, Berlin, S. W. 48.

Design Patents Issued, with Dates of Issue

812,655 (March 24, 1922). Rubber sole and heel with leather edge vulcanized under. Ludwig Bernhardt, Wald, Rheinland.

812,851 (September 17, 1921). Rubber patch for shoe heels. August Altebornholt and Karl Schwenke, Witten, Ruhr.

812,855 (November 23, 1921). Leather edging as means of attaching rubber soles. Wilhelm Schmitz, Homberg-Essenberg.

812,934 (March 21, 1922). Self-acting irrigator. Heinrich Wendel, Nurnbergerstrasse 7, Leipzig.

812,992 (March 22, 1922). Insulating ribbon. Thuringische Glaswoll-Industrie, formerly S. Koch, G. m. b. H., Hamburg.

813,375 (February 15, 1922). Adjustable rubber heel. Franz Jablonski, Grünberg, Silesia.

813,394 (March 28, 1922). Pacifier. Paul Vogel, Bismarkstrasse 53a, Stuttgart.

813,566 (March 18, 1922). Rubber sole with sewing edge. Albin Schindler, Papiermühle, S.-A.

813,752 (April 3, 1922). Collapsible irrigator. Philipp Bernhard Steinmann, Bleichstrasse 29, Frankfort-on-the-Main.

813,896 (February 20, 1922). Pocket inhaler. Rudolf Röhrl, Vilsbiburg.

813,938 (April 6, 1922). Inhaling apparatus. Paul Lukowski, Danzig-Neufahrwasser; represented by Dr. Oskar Arendt, Berlin, W. 50.

813,965 (March 1, 1922) Rubber sole. Technische Handelsgesellschaft m. b. H., Cologne.

814,221 (March 25, 1922). Rubber sole. Westdeutsche Gummi-Compagnie, H. Chormann, Düsseldorf.

814,404 (April 4, 1922). Teething ring and comforter. Wilhelm Pichmann, Sybelstrasse 42, Charlottenburg.

814,910 (March 21, 1922). Rubber heel with leather insert. Gustav Albrecht Strunk, Höninger Weg 228, Köln-Zollstock.

815,366 (April 20, 1922). Rubber heel. Rheinische Gummi-Gesellschaft, W. Klotz & Co., Düsseldorf.

Trade Marks

The United States

Two Kinds of Trade Marks Now Being Registered

Under the rules of the United States Patent Office, trade marks registered under the Act of February 20, 1905, are, in general, fanciful and arbitrary marks, while those registered under the Act of March 19, 1920, Section 1 (b), are non-technical, that is, marks consisting of descriptive or geographical matter or mere surnames. To be registered under the latter act, trade marks must have been used for not less than one year. Marks registered under this act are being published for the first time when registered, any opposition taking the form of an application for cancellation.

Granted May 9, 1922, Act of March 19, 1920, Section 1 (b)

154,818 ALLEN—tire covers. The Allen Auto Specialty Co., New York, N. Y.

154,825 "NOFAULT"—fountain and stylographic pens. C. H. Eibel, New York, N. Y.

154,828 ODELL—tires. International India Rubber Corporation, South Bend, Ind.

154,834 PERFECTION—druggists' sundries. Meinecke & Co., New York, N. Y.

154,835 Representation of section of hose with metal connections at ends—fabric-covered rubber hose with metal lining. Metal Hose & Tubing Co., Inc., Brooklyn, N. Y.

154,836 DEXTER—hard rubber combs, etc. Minneapolis Drug Co., Minneapolis, Minn.

154,843 GRAVITY STYLO—stylographic pens. Sanford Pen Co., Inc., Brooklyn, N. Y.

154,845 SMITH CORD—tires. Smith Rubber & Tire Co., Inc., Garfield, N. J.

154,850 SPRINGFIELD—tires and tubes. The Victor Rubber Co., Springfield, O.

Granted May 16, 1922, Act of February 20, 1905

154,854 ACE—sanitary aprons, belts, diapers, and surgeons' rubber gloves. Ace Specialties Corporation, New York, N. Y.

154,873 LE P. P. R.—fountain pens. L. Badois, Paris, France.

154,909 CORONA—golf balls. Corona Rubber Manufacturing Co., Philadelphia, Pa.

154,910 GOLFMETER—captive ball device for practicing golf. Craig Golfmeter Co., San Francisco, Calif.

154,920 TATTLER—fountain pens. Dunn-Pen Co., Inc., New York, N. Y.

154,921 HUMMING BIRD—fountain pens. Dunn-Pen Co., Inc., New York, N. Y.

154,958 TEST-O-CAP—pressure gages for pneumatic tires, etc. The Greist Manufacturing Co., New Haven, Conn.

154,981 JACKSON'S IMPERVO on representation of a tire surrounding figure of a man standing on a pile of tires—puncture-sealing composition and preservative for pneumatic tires. Jackson Laboratories, Indianapolis, Ind.

154,983 ELDORADO—rubber erasers. Joseph Dixon Crucible Co., Jersey City, N. J.

155,022 BIG BERTHA—golf balls. H. Nalty, London, Eng.

155,025 ALBALITH—lithopone. The New Jersey Zinc Co., Newark and Franklin, N. J.

155,037 O A K on three dark colored balloons in a group of several—toy balloons of the airship, valve, and squawker type, etc. The Oak Rubber Co., Ravenna, O.

155,038 "OAK"—toy balloons of the airship, valve, and squawker type, etc. The Oak Rubber Co., Ravenna, O.

155,044 DUOFOLD—fountain pens. The Parker Pen Co., Janesville, Wis.

Act of March 19, 1920, Section 1 (b)

155,136 THE AYER PEN BOSTON—fountain pens. M. I. Ayer, Boston, Mass.

155,159 MACUNGIE SHOE MFG. CO. FIRST AID above representation of a stork presenting a pair of shoes to a kneeling infant—turn shoes and slippers in leather, rubber, canvas, etc., for infants and children. Macungie Shoe Manufacturing Co., Macungie, Pa.

Granted May 23, 1922, Act of February 20, 1905

155,248 Representation of a grotesque figure of a monkey in uniform carrying a huge rubber stamp—rubber stamps. M. C. Ledere, Cleveland, O.

155,280 BLACK AND WHITE—fountain pens. Salz Brothers, New York, N. Y.

155,296 TRED-LITE—rubber heels. Twin Tube & Rubber Co., Chicago Heights, Ill.

Act of March 19, 1920, Section 1 (b)

155,311 KNIGHT—rubber tires, casings, and inner tubes. The Canton-Blackstone Co., Canton, O.

155,313 PRONTO—tire repair outfits containing inner tube patches and rubber cement. E. F. Cogley, Omaha, Neb.

155,322 FAULTLESS—squawkers, balloons, balls, dolls, and animals, all essentially of rubber. The Faultless Rubber Co., Ashland, O.

155,323 FAULTLESS—druggists' sundries. The Faultless Rubber Co., Ashland, O.

155,327 STOUTFORM—corsets, brassieres, girdles, hose supporters, etc. Frolaset Corset Co., Detroit, Mich.

Granted May 30, 1922, Act of February 20, 1905

155,426 A BEAR FOR WEAR in white letters on bottom of black square also bearing representation of a polar bear standing halfway through a tire bearing the word "Gillette"—Gillette Rubber Co., assignor to Gillette Rubber Co., a Wisconsin corporation—both of Eau Claire, Wis.

155,448 "ASK YOUR PRO."—golf balls. Holmac, Inc., New York, N. Y.

155,463 KELLY KATS THE TIRES WITH NINE LIVES and silhouette representation of two cats—tires. Kelly-Springfield Tire Co., New York, N. Y.

Act of March 19, 1920, Section 1 (b)

155,575 NEVER-SLIP—garters. R. H. Macy & Co., New York, N. Y.

The Dominion of Canada

Registered

30,929 DUROLASTIC—clothing. H. Seal & Co., Limited, Redcross street, Leicester, Eng.

30,930 DUROLASTIC—goods manufactured from rubber and gutta percha, not including philosophical and scientific instruments, surgical or curative contrivances, clothing, sporting goods, combs and buttons, and stationery supplies. H. Seal & Co., Limited, Redcross street, Leicester, Eng.

30,970 MAGNA—rubber plates, pads, and pieces for attaching to soles and heels of shoes. Phillips' Patents, Limited, 142 to 146 Old street, London, Eng.

30,971 DOMINION SEA RING—swimming tubes. Canadian Consolidated Rubber Co., Limited, Montreal, Que.

30,972 ROYAL CORD—tires. Canadian Consolidated Rubber Co., Limited, Montreal, Que.

30,982 TUFFITE—hose, belting, machinery packing, valves, etc. Stewart R. Browne Manufacturing Co., Inc., New York City, U. S. A.

31,009 SILVERTOWN—pneumatic tire casings. The B. F. Goodrich Co., New York City, U. S. A.

31,077 T. & K. and representation of a crown—chemicals for the rubber industry, compounds of these, and rubber substitutes. Typke & King, Limited, Mitcham Common, Surrey, Eng.

31,113 GOLFMETER with two crossed golf clubs superimposed thereon—captive ball device for playing and practice of golf. Craig Goltmeter Co., San Francisco, Calif., U. S. A.

31,133 SILVERTOWN—telegraph and telephone apparatus, including cables, portable testing sets for cables, etc. India Rubber, Gutta Percha & Telegraph Works Co., Limited, 106 Cannon street, London, Eng.

31,134 SILVERTOWN—balata machine and conveyor belting, sheets for steam packing, etc. India Rubber, Gutta Percha & Telegraph Works Co., Limited, 106 Cannon street, London, Eng.

31,135 SILVERTOWN—golf and tennis balls. India Rubber, Gutta Percha & Telegraph Works Co., Limited, 106 Cannon street, London, Eng.

31,136 SILVERTOWN—rubber and gutta percha goods, including tiling and tiles, buffers, hot water bottles, hydrant ball valves, insulation gloves, motorcycle driving belts, confectionery molds, brake hose, armored hose, grain elevator hose, etc. India Rubber, Gutta Percha & Telegraph Works Co., Limited, 106 Cannon street, London, Eng.

New Zealand

18,779 RAYBESTOS—brake lining, etc. The Raybestos Co., 1427 Railroad avenue, Bridgeport, Conn., U. S. A.

The United Kingdom

Published May 3, 1922

431,018 WRIGLEY'S NIPS CANDY COATED PEPPERMINT GUM, WM. WRIGLEY JR. COMPANY, LIMITED, TORONTO, on representation of label—chewing gum. Wm. Wrigley Jr. Company, Limited, Wrigley Buildings, 233-245 Carlaw avenue, Toronto, Canada; address for service in United Kingdom, care of Reginald W. Barker & Co., 56 Ludgate Hill, London, E. C. 4.

423,833 MAGNA—Rubber pads for attaching to soles of boots and shoes. Phillips' Patents Limited, 142-146 Old street, London, E. C. 1.

Published May 10, 1922

417,020 F. B. M. arranged as a monogram—sporting articles not included in classes other than No. 49. T. O. Harris, trading as Harris & Co., and as Harris Sports Depot, 37 St. Stephen street, Bristol.

419,277 HELSBY—electric cables. British Insulated & Helsby Cables, Limited, Prescot, Lancashire.

419,278 PRESCOT—electric cables. British Insulated & Helsby Cables, Limited, Prescot, Lancashire.

421,528 PRESTO—goods manufactured from rubber and gutta percha not included in classes other than No. 40, but not including tissue used in making them up. Naamlooze Vennoctschap Vereenigde Nederlandsche Rubberfabrieken, 162A Dunolaan Doorwerth, Heveadorp, Holland.

421,529 POLESTAR—goods manufactured from India rubber and gutta percha not included in classes other than No. 40, but not including tobacco pouches or rubber heels. Naamlooze Vennootschap Vereenigde Nederlandsche Rubberfabrieken, 162A Dunolaan, Doorwerth, Heveadorp, Holland.

421,871 PYRAMID in stenciled letters below representation of a pyramid—woven machine belting not included in classes other than Class No. 50 and made of material covered by this class. J. H. Fenner & Co., Limited, The Leather Works, Marfleet avenue, Marfleet, near Kingston-upon-Hull, Yorkshire.

422,471 NEFTE—hose of all kinds included in Class No. 50, for conveying fluids. F. Reddaway & Co., Limited, Victoria Mills, Cheltenham street, Pendleton, Manchester, Lancashire.

422,526 BUNNY—waterproof clothing. Brooklyn Shield & Rubber Co., Inc., 397 Sumner avenue, Brooklyn, New York, U. S. A.; address for service in United Kingdom, care of Marks & Clerk, 57-58 Lincoln's Inn Fields, London, W. C. 2.

423,348 NIPPER—all goods included in Class No. 49 excepting footballs. Kent Brush Co., Limited, Knightrider Works, Knightrider street, Maidstone, Kent.

423,836 SUPERITE—fountain pens. De Witt-La France Co., 54 Washburn avenue, Cambridge, Mass., U. S. A.; address for service in United Kingdom, care of Herbert Haddan & Co., 31-32 Bedford street, Strand, London, W. C. 2.

423,933 TANK and representation of a tank—rubber balls for games and sports. Bethell Brothers, 65 St. Mary Axe, London, E. C. 3.

424,006 THE CERT—all goods included in Class No. 49. F. H. Ayres, Limited, 111 Aldersgate street, London, E. C. 1.

424,007 STAYNORUS—all goods included in Class No. 49. F. H. Ayres, Limited, 111 Aldersgate street, London, E. C. 1.

Published May 17, 1922

421,508 Silhouette of cubist golfer within a rectangle—games of all kinds and sporting articles not included in classes other than Class No. 49. The Charmant Co., Limited, 109-111 New Oxford street, London, W. C. 1.

424,030 HYPHEN—golf balls. Wood-Milne, Limited, 2 Central Buildings, Westminster, London, S. W. 1.

424,147 Fox and representation of a fox—engine and machine packings and jointings included in Class No. 50. The Beldam Packing & Rubber Co., Limited, 29 Gracechurch street, London, E. C. 3.

Published May 24, 1922

412,867 HORSESHOE—tires and tubes. Racine Auto Tire Co., 1215 State street, Racine, Wis., U. S. A.; address for service in United Kingdom, care of Lloyd Wise & Co., 10 New Court, Lincoln's Inn, London, W. C. 2.

418,737 ELDORADO—erasers. Joseph Dixon Crucible Co., Wayne and Monmouth streets, Jersey City, New Jersey, U. S. A.; address for service in United Kingdom, care of A. M. & Wm. Clark, 53-54 Chancery Lane, London, W. C. 2.

422,046 Representation of a shield, quartered, with a conventional figure in the center—goods manufactured from rubber and gutta percha, not included in classes other than No. 40. The General Tire & Rubber Co., Englewood avenue and Lucille street, Akron, Ohio, U. S. A.; address for service in United Kingdom, care of Marks & Clerk, 57-58 Lincoln's Inn Fields, London, W. C. 2.

422,514 An inverted isosceles triangle divided into four smaller equal triangles, each bearing one of the initials "P. P. R. P.," and outside the lower two sides of the triangle the words PURE PLANTATION RUBBER PRODUCTS, LIMITED, 40 FENCHURCH STREET, LONDON, E. C. 3—rubber clothing. Pure Plantation Rubber Products, Limited, 40 Fenchurch street, London, E. C. 3.

422,700 ROTH WING beneath the representation of an eagle, all within a square—asbestos composition and cloth for electrical insulation, asbestos steam packings, jointings, and rubber hose—Rothschild & Wing, Limited, 7 Farringdon Road, London, E. C. 1.

422,929 EAGLE—elastic hose supports, blouse retainers and hat guards. W. J. Adams & Co., Limited, 7 Museum street, Manchester.

423,079 BELCOPIE on conventionalized figure—erasers, etc. M. de C. Lee, Billiter House, Billiter street, London, E. C. 3.

423,865 FORMACEINE—electrical insulation included in Class No. 50. Allen West & Co., Limited, Lewes Road, Brighton, Sussex.

424,010 PRESSULASTIC—all goods included in Class No. 40. W. Drury, 10 Lena Gardens, Shepherd's Bush, London, W. 11.

424,205 METTACORE—packings and jointings included in Class No. 50. James Walker & Co., Limited, Lion Works, Garford street, Poplar, London, E. 14.

424,206 MULLACORE—packings and jointings included in Class No. 50. James Walker & Co., Limited, Lion Works, Garford street, Poplar, London, E. 14.

424,209 RAGONNA—packings and jointings included in Class No. 50. James Walker & Co., Limited, Lion Works, Garford street, Poplar, London, E. 14.

The United Kingdom

Published April 26, 1922

B404,361 EMAREX—mineral rubber. Standard Emarex Co., 208 South La Salle street, Chicago, Ill., U. S. A.; address in United Kingdom, care of White, Langner, Stevens & Parry, 88-90 Chancery Lane, London, W. C. 2.

422,834 ASTRAL—fountain pens. H. Williamson, Limited, 77-81 Farringdon Road, London, E. C. 1.

422,874 BLANKETEER—preservative dressing for rubber. Shuck, Maclean & Co., Limited, 3-7 Gunpowder Alley, Shoe Lane, London, E. C. 4.

422,978 TUI BRAND and representation of a tui or parson bird—rubber and gutta percha goods not included in classes other than No. 40. Downie Brothers, 7 Fenchurch avenue, London, E. C. 3.

423,117 KATEET—rubber cleaner for golf balls. E. J. Byrne, 17 Mincing Lane, London, E. C. 3.

423,468 Conventional design—all goods included in Class No. 40. The Beldam Tyre Co. (1920), Limited, Windmill Road, Brentford, Middlesex.

423,469 Conventional design—playing balls included in Class No. 49. The Beldam Tyre Co. (1920), Limited, Windmill Road, Brentford, Middlesex.

423,604 PRUDENTIAL—all goods included in Class No. 40. Industrial Rubber Products, Limited, Brook House, 191-192 Tottenham Court Road, London, W. 1.

Designs

The United States

Issued* May 9, 1922

60,933 Pneumatic tire tread. Term 14 years. H. S. Berlin, assignor to The Victor Rubber Co.—both of Springfield, O.

60,945 Resilient heel lift. Term 14 years. L. M. Oakley, assignor to Essex Rubber Co.—both of Trenton, N. J.

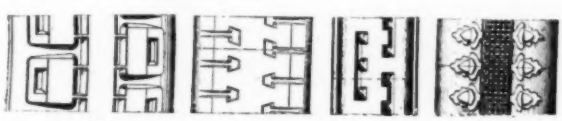
Issued* May 16, 1922

60,954 Rubber heel. Term 14 years. F. Hornquist, Mount Jewett, Pa.

60,971 Toy balloon. Term 3½ years. A. P. Witten, assignor to The Western Reserve Rubber Co.—both of Akron, O.

Issued* May 23, 1922

60,977 Tire tread. Term 3½ years. J. C. Brown and L. E. Kraft, assignors to Fort Wayne Tire & Rubber Manufacturing Co.—all of Fort Wayne, Ind.



60,933 60,977 61,003 61,025

60,979 Toy ball. Term 14 years. F. A. Cigol, Paterson, N. J.

61,003 Resilient tire. Term 14 years. J. C. Tuttle, assignor to Firestone Tire & Rubber Co.—both of Akron, O.

Issued* May 30, 1922

61,017 Sole of rubber boot or shoe. Term 14 years. E. C. Heilhecker, Bristol, R. I., assignor to United States Rubber Co., a New Jersey corporation.

61,025. Tire. Term 3½ years. C. Zeglen, Chicago, Ill.

*Under Rule No. 167 of the United States Patent Office, the issue closes weekly on Thursday, and the patents of that issue bear date as of the fourth Tuesday thereafter.

The Dominion of Canada

5,409 Lumberman shoe. Patented April 22, 1922. Gutta Percha & Rubber, Limited, Toronto, Ont.

5,423 Tire. Patented May 9, 1922. E. R. Case, Toronto, Ont.

5,424 Shoe sole. Patented May 10, 1922. The Panther Rubber Co., Limited, Sherbrooke, Que.

5,425 Shoe sole. Patented May 10, 1922. The Panther Rubber Co., Limited, Sherbrooke, Que.

5,426 Shoe sole. Patented May 10, 1922. The Panther Rubber Co., Limited, Sherbrooke, Que.

5,427 Shoe sole. Patented May 10, 1922. The Panther Rubber Co., Limited, Sherbrooke, Que.

5,428 Shoe heel. Patented May 10, 1922. The Panther Rubber Co., Limited, Sherbrooke, Que.

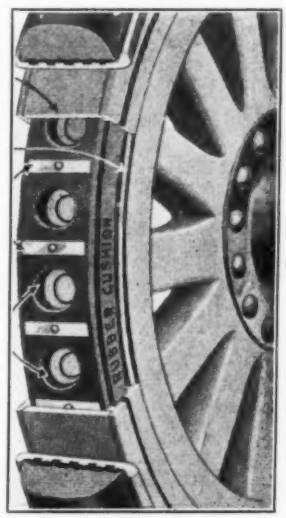
5,429 Shoe heel. Patented May 10, 1922. The Panther Rubber Co., Limited, Sherbrooke, Que.

5,430 Shoe heel. Patented May 10, 1922. The Panther Rubber Co., Limited, Sherbrooke, Que.

5,431 Shoe heel. Patented May 10, 1922. The Panther Rubber Co., Limited, Sherbrooke, Que.

CUSHION WHEEL FOR TRUCKS

The accompanying illustration shows the details of the latest Martin cushion wheel, which has a general resemblance to that made by Morand Brothers & Martin, described in THE INDIA RUBBER WORLD, November, 1918. The difference consists partly in the form of the rubber cushion, which is provided with alternate vacuum cups and a bolting-on device for the prevention of circumferential movement of the cushion in service. The vacuum cups also provide opportunity for the movement of the rubber of the cushion under compression. A second difference is noted in the employment of pressed in T-angle rings in place of a flat surface band for encasing the rubber cushion. The entire wheel is assembled under hydraulic pressure. The cushioning effect is such that a solid tire mounted on the wheel may be worn down uniformly, practically to the flanges of its steel base.—Martin Cushion Wheel Co., 311-313 North Sangamon street, Chicago, Illinois.



Martin Cushion Wheel

ATTACHING TENNIS BALL COVERS WITHOUT SEWING

An improvement in attaching felt covers to tennis balls is the subject of British patent No. 171,741. The purpose is to cover the rubber center with a certain amount of fullness, compacting the fibers of the fabric together and imparting to it a capacity to stretch and yield. The stretch being thus left in the fabric, when the finished ball is subjected to a blow the felt cover will accommodate itself to and follow the rubber center in assuming the new shape without loosening its cemented hold on the ball.

A CALENDER, WITH A TOTAL WEIGHT OF 192,000 POUNDS, SAID to be the largest in the world, has three rolls, each 92 inches long and 32 inches in diameter. The largest hydraulic press in the world, and, like the calender, used in belt making, has three presses, each weighing 550,000 pounds, 36 feet long and 74 inches wide. These machines are used in the manufacture of "Condor" belting, a product of the Manhattan Rubber Manufacturing Co., Passaic, New Jersey.

Review of the Crude Rubber Market

New York

EACH succeeding week of the past month in the rubber market has been characterized by dullness. There was very little interest on the part of manufacturers. Bids from that source were few and at figures that did not meet with dealers' acceptance. Continued reports of a conference between English and Dutch plantation interests, looking toward adoption of effective restrictive measures as to plantation rubber output, did not render dealers enthusiastic to sell. A later report that Dutch planters would restrict output caused the market to advance about one cent a pound.

Spot prices for plantations have been virtually constant, varying not more than ¼-cent above or below 15 cents a pound. It should be noted that with exchange at $4.48 as it was early in the month, rubber at 7¾*d.* costs about 15¼ cents to import, while a year ago, with exchange at $3.60, 7¾*d.* rubber cost to import 11¾ cents; which shows the strong influence of the rate of exchange on low priced rubber.

Brown crêpe has been steady at close to 11 cents a pound. Parás, balata, Pontianak and other grades have been without interest and in very light demand.

Importations of all grades during May were 114,608 tons, compared with 65,235 tons for May one year ago. Plantation arrivals for May were 19,485 tons compared with 9,127 tons for May one year ago.

Spot and future quotations on standard plantation and Brazilian grades were as follows:

PLANTATIONS. June 1. Spot first latex crêpe, 15-15¼ cents; July-September, 15½-15¾ cents; July-December, 15⅞-16 cents; October-December, 16⅛-16¼ cents. June 26. Spot first latex crêpe, 15¼-15⅜ cents; July-September, 15½-15⅝ cents; July-December, 15¾-16 cents; January-June, 16¾-17 cents.

June 1. Spot ribbed smoked sheets, 15-15¼ cents; July-September, 15½-15¾ cents; July-December, 15⅞-16 cents; October-December, 16⅛-16¼ cents. June 26. Spot ribbed smoked sheets, 15¼-15⅜ cents; July-September, 15½-15⅝ cents; July-December, 15¾-16 cents; January-June, 16¾-17 cents.

June 1. Spot, No. 1 amber crêpe, 14¾-15 cents; July-September, 15-15½ cents; July-December, 15¾-16 cents. June 26. Spot, No. 1 amber crêpe, 15⅛ cents; July-September, 15⅜ cents; July-December, 15⅝ cents.

June 1. Spot, No. 1 rolled brown crêpe, 11-11½ cents; July-September, 11¾-12 cents; July-December, 12-12½ cents. June 26. Spot, No. 1 rolled brown crêpe, 11½ cents; July-September, 11⅝ cents; July-December, 12⅛ cents.

SOUTH AMERICAN PARÁS AND CAUCHO. June 1. Spot, up river fine, 18½ cents; islands fine, 17-17½ cents; upriver coarse, 12¾-13 cents; islands coarse, 8 cents; Cametá, 9-9½ cents; caucho ball, 13-13½ cents. June 26. Spot, upriver fine, 18 cents; islands fine, 16¾ cents; upriver coarse, 12¾ cents; islands coarse, 8 cents; Cametá, 9½ cents; caucho ball, 10½-12¾ cents.

London

The market during the month has been the counterpart of that in New York for inactivity and continued low price levels. An improved demand from America was noted early in the month and stiffened prices temporarily. London stocks were reported at that time as well over 60,000 tons. The month closed with a sharp advance due to the report of Dutch restriction.

New York Quotations

Following are the New York spot quotations per pound, for one year, one month ago, and June 26, the current date:

Plantation Hevea	July 1, 1921	June 1, 1922	June 26, 1922
CREPE			
First latex	$0.14½@	$0.14½@	$0.15¼@.15⅜
Off latex	.13 @	.14 @	.15 @
Amber No. 1	.12 @	.14¼@	.15 @
Amber No. 2	.11 @	.14 @	.14½@
Amber No. 3	.10 @	.13½@	.14 @
Brown, thick thin	.12½@	.13¾@	.14¼@
Brown, specky	.09 @	.12 @	.13¾@
Brown, rolled	.09 @	.10¾@	.11½@
SHEET			
Smoked, ribbed	.12 @.13½	.14½@	.15¼@.15⅜
Smoked, plain	.11 @	.14 @	†.14¾@
Unsmoked	.10 @	.13½@	†.14 @
Colombo scrap No. 1	.08 @	.11½@	.12 @
Colombo scrap No. 2	.07 @	.10¼@	.10½@
East Indian			
PONTIANAK			
Banjermassin	.06½@	.07½@	.07½@
Palembang	@	.08 @	.08 @
Pressed block	.11 @	.12 @	.12¼@
Sarawak	.05½@	.06 @	.06½@
South American			
PARAS			
Upriver fine	.15 @.16	.18¼@	.18 @
Upriver fine*	@	.30 @	*.27½@
Upriver medium	.13 @.14	.17 @	.17 @
Upriver coarse	.07 @.08	.12½@	.12¾@
Upriver weak, fine	.12 @	.15 @	.15 @.15½
Islands fine	.17 @	.17 @	.16¾@
Island fine*	@	.29 @	*.26 @
Islands medium	.13 @	.15 @	.15 @.16
Islands coarse	.09 @	.08½@	.08 @
Cametá	.08 @	.09 @	.09½@
Cametá*	@	.20 @	*.19 @
Acre Bolivian fine	.16 @.16½	.18¼@	.18½@
Acre Bolivian fine*	@	.30 @	*.27½@
Beni Bclivian	@	.19 @	.18½@
Madeira fine	.18 @.19	.18½@	.19 @.19¼
Peruvian fire	.15 @	.17¼@	.16½@.17
Tapajos fine	.15 @	.17½@	.17 @

Maniçobas	July 1, 1921	June 1, 1922	June 26 1922
CAUCHO			
Upper caucho ball	$0.09 @$0.10	$0.13 @	$0.12¼@
Upper caucho ball*	@	.19 @	*.18½@
Lower caucho ball	.07 @	.11 @	.10½@
Ceará negro heads	†.10 @	.09 @	†.10 @
Ceará scrap	†.04 @	.08 @	†.05 @
Maniçoba 30% guaranty	†.10 @	.07 @	†.08 @
Mangabeira, thin sheet	†.12 @	.10 @	†.12 @
Centrals			
Central scrap	.06 @.08	.08 @.09	.08 @.09
Central scrap and strip	.06 @.08	.06 @.07	.06½@.07
Central wet sheet	.03 @.04	.03 @.04	.04 @.06
Corinto scrap	.06 @.08	.08 @.09	.08 @.09
Esmeralda sausage	.06 @.08	.08 @.09	.08 @.09
Guayule washed and dried	.26 @	.26 @	.26 @
Africans			
Benguela, No. 1, 28½%-	.04 @	.08½@	@
Benguela, No. 2, 32½%-	@	.08 @	†.07 @.07¼
Congo prime, black upper	@	.15 @	†.14 @.15
Congo prime, red upper	@	.12 @	†.12 @
Kassai, black	@	@	@
red	@	.11½@	†.10½@.12
Gutta Percha			
Gutta Siak	.13½@.14	.15 @.17	.15 @
Red Macassar	1.50 @2.00	2.85 @3.00	2.85 @3.00
Balata			
Block, Ciudad Bolivar	.51 @.54	.48 @.50	.51 @
Colombian	.35 @.38	.40 @.42	.42 @.45
Panama	.25 @.35	.25 @.35	.43 @
Surinam sheet	.65 @.70	.65 @.68	.68 @
amber	.67 @.73	.70 @.72	.74 @.76
Chicle			
Colombia	@	@	.50 @
Honduras	@	@	.70 @
Venezuela	@	@	.72 @
Yucatan fine	@	@	.75 @.80

*Washed and dried crêpe. Shipment from Brazil.
†Nominal.

Reclaimed Rubber

The market situation in reclaimed rubber continues essentially unchanged. The policy of rubber manufacturers is not to contract for supplies beyond known and safe requirements. This condition in conjunction with the continued low level of crude rubber prices results in continued dullness in the reclaiming business. Production is still on fractional capacity with grades showing excellent plastic quality at very low prices.

The following prices are all nominal.

New York Quotations

JUNE 26, 1922

Prices subject to change without notice.

STANDARD RECLAIMS	
Floating	$0.12 @ $0.13
Friction	.12 @ .13
Mechanical	.08 @ .10
Shoe	.10¼ @ .10¾
Tires, auto	.09 @ .10
truck	.09 @ .10
White	.13 @ .14

Comparative Low and High New York Spot Rubber Prices

	June 1922*	June 1921	June 1920
PLANTATIONS			
First latex crêpe	$0.14½ @ $0.15¼	$0.14 @ $0.17½	$0.37½ @ $0.39
Smoked sheet, ribbed	.14⅝ @ .15⅝	.12 @ .14¾	.37¼ @ .39
PARAS			
Upriver, fine	.18 @ .18	.15½ @ .18	.36¾ @ .38½
Upriver, coarse	.12¼ @ .13	.07 @ .09¼	.27¼ @ .28¾
Islands, fine	.16⅞ @ .17½	.16 @ .18	.38 @ .40½
Islands, coarse	.07¾ @ .13	.07 @ .09	.21 @ ..
Cametá	.08 @ .09½	.07½ @ .09	.21 @ .23

*Figured to June 26, 1922.

Amsterdam Rubber Market

JOOSTEN & JANSSEN, Amsterdam, report under date of June 9, 1922: The rubber market has been dull, the turnover only moderate and prices slowly gave way though producers generally were reticent and demand was not unsatisfactory. The tone at the close is quiet at following prices:

Hevea crêpe, Fl. 39.	Sheets, Fl. 39½ spot.	
Hevea crêpe, Fl. 40½.	Sheets, Fl. 41	July to September.
Hevea crêpe, Fl. 42.	Sheets, Fl. 42½	October to December.
Hevea crêpe, Fl. 43½.	Sheets, Fl. 44	January to March.

Singapore Rubber Market

GUTHRIE & CO., Limited, Singapore, reports under date of May 11, 1922:

There was again a heavy quantity forward for sale at the weekly auctions yesterday, the various catalogs totaling 932 tons. Trade buyers were more in the market and all grades were in firm demand.

Standard sheet sold at 27 cents, cased lots fetching ½-cent more, a decline of 1 cent on the week. Good F. A. Q. sheet was in strong request up to 27 cents, while off sheet remained steady. Pale crêpes were readily salable at an average decline of 1 cent. Lower grade crêpes were steady.

The sale closed strongly at best with sellers holding for higher prices, and 646 tons were sold.

The following is the course of values:

	In Singapore per Pound	Sterling Equivalent per Pound in London
Sheet, fine ribbed smoked	27 @ 27½	—/ 8½ @ —/ 8¾
Sheet, good F. A. Q.	26½ @ 27	—/ 8⅜ @ —/ 8½
Sheet, off quality	22 @ 26	—/ 7⅛ @ —/ 8¼
Crêpe, fine pale	26½ @ 27	—/ 8⅜ @ —/ 9
Crêpe, good pale	25½ @ 26	—/ 8⅛ @ —/ 8⅜
Crêpe, off quality	23 @ 25	—/ 8 @ —/ 8½
Crêpe, fine brown	24 @ 25	—/ 8¼ @ —/ 8½
Crêpe, good brown	20 @ 23½	—/ 7⅛ @ —/ 8⅛
Crêpe, dark brown	17½ @ 22½	—/ 6⅛ @ —/ 7¾
Crêpe, bark	17 @ 21½	—/ 6¼ @ —/ 7½

British Malaya Rubber Exports

An official cablegram from Singapore states that 55,527,600 pounds (24,789 tons) of rubber were exported from British Malayan ports in the month of May, compared with 14,400 tons in April and 19,304 tons in March. May transhipments amounted to 1,408,800 pounds (629 tons).

New York Average Spot Rubber Prices

PRICES IN CENTS PER POUND

	May, 1922														June, 1922									
PLANTATIONS	15	16	17	18	19	20	22	23	24	25	26	27	29	30*	31	1	2	3	5	6	7	8	9	10
Sheet																								
Ribbed smoked	15⅜	14⅞	14⅞	14⅞	14⅜	14⅞	14⅞	14⅜	14½	14⅜	14½	14½	14½	....	15¾	15⅜	14⅞	14⅞	14⅞	14⅜	14⅜	14⅜	14⅞	15
Crêpe																								
First latex	15⅜	14⅞	14⅞	14⅞	14⅞	14⅞	14⅞	14⅜	14½	14⅜	14½	14½	14½	....	15¼	15½	14⅞	14⅞	14⅞	14⅝	14⅝	14⅝	14⅞	15
Off latex	15⅜	14½	14⅜	14¼	14½	14¾	14⅜	14⅜	14½	14	14¼	14⅝	14⅝	....	14⅞	14⅜	14½	14½	14⅜	14¼	14¼	14¼	14⅜	14⅜
No. 1 blanket	15⅜	14⅝	14¾	14½	14⅜	14⅜	14½	14	14¼	14⅛	14⅜	14⅜	14⅜	....	14⅝	14⅜	14½	14½	14½	14¾	14¼	14¼	14½	14⅜
No. 2 blanket	14¾	14⅛	14¼	14	14⅛	14⅛	14¼	13¾	13¾	13⅝	14	14	14	....	14⅜	14⅛	14	13¾	14	13⅞	13⅞	13¾	13¾	13¾
No. 3 blanket	14⅛	14⅛	14	13¾	13½	13⅜	14	13⅜	13⅜	13⅜	13⅜	13⅜	13¾	....	13⅝	13⅜	13⅜	13⅛	13⅛	13⅛	13⅜	13¼	13¼	13½
Thin, clean, brown	14½	13½	13¾	14	14½	14½	14⅛	13½	13½	13⅜	13¾	13¾	13¾	....	14½	14½	13½	13⅞	14	13½	13⅞	13⅜	13½	14
Specky brown	14	13½	13¾	13½	13¾	13¾	13¾	13⅛	13⅛	13⅛	13¼	13⅝	13½	....	13½	14	13⅛	13½	13⅛	13⅜	13	13	13¼	13⅜
Rolled brown	12⅛	11¾	11¾	11½	11½	11½	11⅝	11¾	10⅝	10⅝	10¾	10¾	10¾	....	11¼	11¼	11⅛	11⅛	11	10⅞	10⅝	10⅝	10⅞	11

*Holiday.

Crude Rubber Arrivals at New York as Stated by Ships' Manifests

Parás and Caucho

	Fine	Medium	Coarse	Caucho	Totals Pounds
MAY 21. By "Stephen," Pará.					
Poel & Kelly, Inc.	33,646	.....	39,074	.....	72,720
Schafer & Meyer	†23,520	.....	*†26,880	†7,840	58,240
MAY 24. By "Polycarp," Far East.					
General Rubber Co.	215,040	.....	.....	.....	215,040
Meyer & Brown, Inc.	.....	.....	.....	.....	‡56,000
Poel & Kelly, Inc.	55,191	51,592	.....	55,210	161,993
Fred Stern & Co., Inc.	.....	.....	5,376	.....	5,376
MAY 24. By "Sallust," Manáos.					
Meyer & Brown, Inc.	‡47,040	.....	22,400	.....	69,440
JUNE 1. By "Barbacena," Pará.					
Paul Bertuch	21,412	.....	33,293	.....	54,705
JUNE 8. By "Michael," Far East.					
Paul Bertuch	157,482	4,514	24,619	.....	186,615
General Rubber Co.	22,400	.....	44,800	123,200	190,400
L. Littlejohn & Co., Inc.	89,610	.....	.....	.....	89,610
JUNE 16. By "Bonheur," Pará.					
H. A. Astlett & Co.	44,800	.....	.....	.....	44,800
Paul Bertuch	.....	.....	16,177	.....	16,177
L. Littlejohn & Co.	37,478	.....	.....	.....	37,478
Meyer & Brown, Inc.	‡44,800	.....	.....	44,800	89,600
Poel & Kelly, Inc.	.....	.....	11,200	.....	11,200

‡Fine and medium.
*Includes Cametá.
†Washed and dried in Brazil.

Crude Rubber Arrivals at New York as stated by Ships' Manifests—*Continued*

Plantations

(Figured at 180 lbs. net to the bale or case.)

	Pounds	Totals
MAY 18. By "Kathlamba," Far East.		
Chas. T. Wilson Co., Inc....	181,400	
W. R. Grace & Co.....	29,520	
Various	941,260	1,152,180
MAY 18. By "Ajax," Far East.		
William H. Stiles & Co.....	350,560	
Chas. T. Wilson Co., Inc....	156,800	
Poel & Kelly, Inc.....	§93,600	
Converse Rubber Co.....	26,640	
Hood Rubber Co.....	§115,560	
Firestone Tire & Rubber Co.	52,200	
Aldens' Successors, Inc.....	11,200	
Baird Rubber & Trading Co., Inc.	432,320	
General Rubber Co.....	1,276,800	
F. R. Henderson & Co., Inc.	473,600	
Poel & Kelly, Inc.....	1,265,447	
Poel & Kelly, Inc.....	§134,400	
Various	4,222,973	8,612,100
MAY 19. By "Half Moon," Far East.		
General Rubber Co.....	569,880	
H. A. Astlett & Co.....	56,000	
Schafer & Meyer.....	44,800	
Chas. T. Wilson Co., Inc....	176,960	
Poel & Kelly, Inc.....	150,704	
Various	1,495,276	2,493,620
MAY 19. By "Maine," London.		
Alfred Kramer & Co.....	115,740	115,740
MAY 20. By "Havre Maru," Singapore.		
Poel & Kelly, Inc.....	1,085,584	
Schafer & Meyer.....	33,600	
Various	194,636	1,313,820
MAY 21. By "Virgilia," London.		
Baring Bros.	50,400	
Various	370,080	420,480
MAY 22. By "Dacre Castle," Far East.		
Baird Rubber & Trading Co., Inc.	201,600	
Firestone Tire & Rubber Co.	499,680	
J. T. Johnstone & Co., Inc..	123,200	
General Rubber Co.....	343,280	
F. R. Henderson & Co., Inc.	233,900	
Hood Rubber Co.....	325,216	
Meyer & Brown, Inc.....	112,000	
H. A. Astlett & Co.....	22,400	
Fred Stern & Co., Inc.....	72,777	
Chas. T. Wilson Co., Inc....	56,000	
Poel & Kelly, Inc.....	329,330	
Various	§73,980	
Various	2,014,837	4,408,200
MAY 26. By "Anyo Maru," Far East.		
L. Littlejohn & Co., Inc....	¶112,000	112,000
MAY 28. By "Esther Dollar," Far East.		
Fred Stern & Co., Inc.....	216,631	
Baird Rubber & Trading Co., Inc.	224,000	
F. R. Henderson & Co., Inc.	201,600	
Hood Rubber Co.....	67,200	
J. T. Johnstone Co., Inc....	271,040	
Poel & Kelly, Inc.....	234,747	
Various	1,878,982	3,094,200
MAY 28. By "Maartensdyk," Far East.		
Huth & Co.....	117,180	
General Rubber Co.....	44,800	
F. R. Henderson & Co., Inc.	179,200	
Poel & Kelly, Inc.....	273,495	
H. A. Astlett & Co.....	44,800	
L. Littlejohn & Co., Inc....	645,162	
Schafer & Meyer.....	33,600	
Fred Stern & Co., Inc.....	191,177	
William H. Stiles & Co.....	11,200	
Chas. T. Wilson Co., Inc....	89,600	
Various	579,646	2,209,860
MAY 28. By "Montana," London.		
Various	124,920	124,920
MAY 29. By "Port Lincoln," London.		
Various	672,300	672,300
MAY 29. By "Celtic," Liverpool.		
Various	51,480	51,480
MAY 30. By "Celtic Prince," Far East.		
J. T. Johnstone & Co., Inc..	73,920	
Firestone Tire & Rubber Co.	407,880	
Baird Rubber & Trading Co., Inc.	78,400	
General Rubber Co.....	347,200	
F. R. Henderson & Co., Inc.	156,800	
Hood Rubber Co.....	560,000	
H. A. Astlett & Co.....	100,800	
Continental Rubber Co. of New York.....	11,200	
L. Littlejohn & Co., Inc....	672,000	
Fred Stern & Co., Inc.....	44,800	
William H. Stiles & Co....	33,600	
Chas. T. Wilson Co., Inc....	168,000	
Poel & Kelly, Inc.....	377,712	
Various	§163,260	
Various	646,348	3,841,920
JUNE 4. By "Noordam," Rotterdam.		
Various	155,340	155,340
JUNE 6. By "Montauk," London.		
Various	1,980	1,980
JUNE 11. By "Methven," Far East.		
Poel & Kelly, Inc.....	78,400	
H. A. Astlett & Co.....	22,400	
Thornet & Fehr, Inc.....	54,000	
Baring Bros.	43,200	
Baird Rubber & Trading Co., Inc.	134,400	
F. R. Henderson & Co., Inc.	44,800	
Meyer & Brown, Inc.....	253,120	
L. Littlejohn & Co., Inc....	907,200	
Fred Stern & Co., Inc.	145,791	
Chas. T. Wilson Co., Inc....	100,800	
Various	798,809	1,582,920
JUNE 12. By "Vasconia," London.		
Various	462,600	462,600
JUNE 14. By "Dewey," Far East.		
L. Littlejohn & Co., Inc....	¶56,000	56,000
JUNE 14. By "Mesaba," London.		
Meyer & Brown, Inc.....	56,000	56,000
JUNE 16. By "City of Benares," Far East.		
Poel & Kelly, Inc.....	58,260	
General Rubber Co.....	787,360	
F. R. Henderson & Co., Inc.	212,800	
Meyer & Brown, Inc.....	112,000	
Continental Rubber Co. of New York.....	67,200	
L. Littlejohn & Co., Inc....	1,240,480	
Fred Stern & Co., Inc.....	13,498	
Chas. T. Wilson Co., Inc....	112,000	2,603,598
JUNE 17. By "City of Auckland," Far East.		
Poel & Kelly, Inc.....	15,280	
H. A. Astlett & Co.....	56,000	
Continental Rubber Co. of New York.....	100,800	
Baird Rubber & Trading Co., Inc.	6,720	
Hood Rubber Co.....	§44,800	
Hood Rubber Co.....	33,720	
J. T. Johnstone & Co., Inc..	36,960	
L. Littlejohn & Co., Inc....	134,400	
Fred Stern & Co., Inc.....	22,400	451,080
JUNE 17. By "Knight Templar," Far East.		
Baird Rubber & Trading Co., Inc.	134,400	
J. T. Johnstone & Co., Inc..	207,284	
General Rubber Co.....	1,920,960	
F. R. Henderson & Co., Inc.	248,640	
Hood Rubber Co.....	§11,244	
Meyer & Brown, Inc.....	378,560	
Continental Rubber Co. of New York.....	123,200	
L. Littlejohn & Co., Inc....	1,097,600	
William H. Stiles & Co....	78,400	
Fred Stern & Co., Inc.....	70,850	
Chas. T. Wilson Co., Inc....	123,200	
Poel & Kelly, Inc.....	213,325	
Adolph Hirsch & Co., Inc...	5,600	4,663,063
JUNE 17. By "Venusia," London.		
L. Littlejohn & Co., Inc....	3,101	
Fred Stern & Co., Inc.....	22,400	25,501
JUNE 19. By "Ryndam," London.		
L. Littlejohn & Co., Inc....	235,200	235,200

§Arrived at Boston.
¶Arrived at San Pedro.

	Pounds	Totals
Africans		
JUNE 5. By "La Savoie," Havre.		
Various	230	230
Pontianak		
MAY 18. By "Ajax," Singapore.		
L. Littlejohn & Co., Inc....	61,000	
Various	36,800	97,800
MAY 19. By "Half Moon," Singapore.		
Various	3,600	3,600
MAY 22. By "Dacre Castle," Singapore.		
L. Littlejohn & Co., Inc....	92,000	
Various	76,500	168,500
MAY 28. By "Maartensdyk," Tandjong Priok.		
L. Littlejohn & Co., Inc....	4,500	
Various	17,100	21,600
MAY 28. By "Esther Dollar," Singapore.		
L. Littlejohn & Co., Inc....	56,000	
Various	183,100	239,100
MAY 30. By "Celtic Prince," Singapore.		
L. Littlejohn & Co., Inc....	217,000	
Various	29,300	246,300
JUNE 17. By "Knight Templar," Far East.		
L. Littlejohn & Co., Inc....	5,600	5,600
Gutta Siak		
MAY 19. By "Half Moon," Singapore.		
Various	44,700	44,700
MAY 28. By "Maartensdyk," Tandjong Priok.		
Various	16,200	16,200
Gutta Percha		
MAY 22. By "Dacre Castle," Singapore.		
L. Littlejohn & Co., Inc....	112,000	112,000
MAY 28. By "Esther Dollar," Singapore.		
L. Littlejohn & Co., Inc....	56,000	56,000
MAY 28. By "Maartensdyk," Tandjong Priok.		
L. Littlejohn & Co., Inc....	123,200	
Various	76,500	199,700
MAY 31. By "Ribe," St. Vincent.		
Various	33,600	33,600
Balata		
MAY 18. By "Metapan," Colombia.		
G. Amsinck & Co., Inc.....	2,400	2,400
MAY 24. By "Polycarp," Far East.		
H. A. Astlett & Co.....	2,400	
Various	2,550	4,950
MAY 28. By "Surinam," Paramaribo.		
William Schall & Co.....	3,300	3,300
MAY 31. By "Almagro," Buenaventura.		
Ultramares Corporation	7,700	7,700
JUNE 6. By "Granfos," Puerto Colombia.		
Meeke & Co.....	5,400	5,400
JUNE 6. By "General G. W. Goethals," Cristobal.		
Pablo Calvet & Co.....	2,185	2,185
JUNE 8. By "Michael," Far East.		
General Rubber Co.....	11,200	11,200
JUNE 10. By "Paria," Paramaribo.		
William Schall & Co.....	4,950	
Various.	300	5,250
JUNE 12. By "Paria," Surinam.		
Middleton & Co., Ltd.....	661	661
JUNE 12. By "Prins Frederik Hendrick," Paramaribo.		
William Schall & Co.....	3,750	3,750
Guayule		
JUNE 2. By "El Mundo," Mexico.		
Continental-Mexican Rubber Co.	62,300	62,300

Official India Rubber Statistics for the United States

Imports of Crude and Manufactured Rubber

	April 1921 Pounds	April 1921 Value	April 1922 Pounds	April 1922 Value
UNMANUFACTURED—*free*				
India rubber				
From France	.....	.....	.....	.....
Netherlands	622,022	$103,804	166,536	$31,522
Portugal	.....	.....	.....	.....
United Kingdom	3,374,461	524,827	2,584,740	451,557
Canada	18,000	1,800	.....	.....
Central America	6,681	1,318	.....	.....
Mexico	.....	.....	145,300	29,060
Brazil	1,611,408	177,074	1,113,748	120,503
Peru	8,377	875	141,449	30,180
Other South America	224,857	36,959	10,215	5,599
British East Indies	17,628,636	3,908,880	33,637,491	5,625,333
Dutch East Indies	2,592,966	749,640	5,335,292	955,305
Other countries	.....	.....	272,588	23,039
Totals	26,087,408	$5,505,177	43,407,359	$7,272,098
Balata	157,667	95,491	171,064	90,608
Jelutong (Pontianak)	140,789	25,197	538,007	33,793
Gutta percha	14,474	1,489	265,017	22,227
Guayule	.....	.....	.....	.....
Rubber scrap	146,737	8,778	139,106	2,100
Totals, unmanufactured	26,547,075	$5,636,132	44,520,553	$7,420,826
Chicle ..... *dutiable*	728,896	361,682	1,595,779	817,577
MANUFACTURED—*dutiable*				
India rubber and gutta percha	.....	$95,913	.....	$162,624
India rubber substitutes	.....	.....	.....	.....

Exports of Domestic Merchandise

MANUFACTURED				
India rubber				
Reclaimed	59,011	$6,776	126,599	$11,642
Scrap and old	643,664	28,995	600,880	24,074
Footwear				
Boots[1] ..... *pairs*	16,296	48,187	12,202	36,148
Shoes[1] ..... *pairs*	104,283	115,808	32,239	30,315
Canvas shoes with rubber soles[1]	.....	.....	437,515	336,687
Druggists' rubber sundries[1]	.....	68,404	66,133	73,135
Hard rubber goods				
Battery jars and accessories	.....	.....	49,279	20,763
Other electrical supplies	.....	.....	6,580	5,070
Other hard rubber goods	.....	.....	25,779	23,341
Tires				
Pneumatic casings				
For automobiles[1] *number*	.....	791,617	99,062	1,374,343
Other[1]	.....	.....	2,920	12,643
Pneumatic tubes				
For automobiles[1]	.....	77,020	73,176	154,422
Other[1]	.....	.....	2,489	2,393
Solid tires				
For automobiles and motor trucks[1]	.....	67,484	4,489	100,639
Other[1]	.....	.....	73,136	18,359
All other tires[1]	.....	29,585	.....	.....
Tire repair materials[1]	.....	.....	53,471	21,781
Belting[1]	.....	105,297	133,198	69,394
Hose[1]	.....	131,478	268,373	96,157
Packing[1]	.....	47,007	59,965	29,324
Soles and heels[1]	.....	27,328	128,144	54,023
Thread[1]	.....	.....	73,589	81,606
Other rubber manufactures[1]	.....	463,293	459,938	246,840
Totals, manufactured	.....	$2,008,279	.....	$2,823,099
MANUFACTURED				
Fountain pens ..... *number*	11,659	$16,742	7,065	$5,447
Insulated wire and cables	.....	.....	122,927	23,819

Exports of Foreign Merchandise

UNMANUFACTURED				
India rubber	1,700,839	$308,835	964,869	$144,100
Balata	35,680	18,735	48,859	31,789
Jelutong (Pontianak)	.....	.....	20,835	3,109
Totals, unmanufactured	1,736,519	$327,570	1,034,563	$178,998
MANUFACTURED				
Gutta percha and india rubber	.....	$15.16	.....	$51
India rubber substitutes	.....	.....	.....	.....
Totals, manufactured	.....	$15.16	.....	$51
Chicle	943	366	.....	.....

[1]Details of exports of domestic merchandise by countries during April, 1922, appear in this issue.

Custom House Statistics

New York

Imports

	April 1921 Pounds	April 1921 Value	April 1922 Pounds	April 1922 Value
UNMANUFACTURED—*free*				
Crude rubber				
From Netherlands	622,022	$103,804	166,536	$31,522
England	3,374,461	527,827	2,583,990	451,359
Brazil	1,611,408	177,074	1,113,748	120,503
Chile	.....	.....	523	167
Colombia	50,000	13,860	2,944	792
Dutch Guiana	.....	.....	6,748	4,640
Peru	8,377	875	141,449	30,180
British India	306,960	59,673	79,520	12,520
Ceylon	.....	.....	4,488,517	711,220
Straits Settlements	12,524,541	3,036,180	28,047,794	4,743,190
Java	.....	.....	1,635,712	285,871
Dutch East Indies	2,138,724	579,517	3,644,426	656,097
British East Indies	4,285,845	712,404	.....	.....
French Indo China	.....	.....	22,400	4,477
British East Africa	.....	.....	10,508	1,785
Bolivia	148,200	16,552	.....	.....
Nicaragua	4,080	408	.....	.....
Panama	2,661	910	.....	.....
Uruguay	22,357	5,578	.....	.....
Far Eastern Republic	.....	.....	239,680	16,777
Totals	25,099,576	$5,231,662	42,184,495	$7,071,100
Balata	157,667	95,491	171,064	90,608
Jelutong (Pontianak)	140,789	25,197	538,007	33,793
Gutta percha	14,474	1,489	22,227	265,017
Totals	25,412,506	$5,353,839	42,915,793	$7,460,518
Rubber scrap and reclaimed	96,700	4,968	450	30
Totals, unmanufactured	25,509,206	$5,358,807	42,916,243	$7,460,548
Manufactures of rubber and gutta percha ..... *dutiable*	.....	$70,418	.....	$111,215
Chicle ..... *dutiable*	90,186	39,007	1,119,416	591,543

Exports

MANUFACTURED				
Rubber scrap and reclaimed	335,573	$21,240	426,923	$19,849
Automobile and other tires ..... *number*	.....	527,804	151,952	1,184,639
Inner tubes ..... *number*	.....	47,552	53,700	111,933
Tire repair materials	.....	.....	32,935	13,227
Boots and shoes ..... *pairs*	68,513	90,983	21,701	26,208
Canvas shoes with rubber soles ..... *pairs*	.....	.....	289,866	228,923
Soles and heels	.....	23,091	71,700	34,041
Battery jars and accessories	.....	.....	4,812	1,784
Other electrical supplies	.....	.....	3,953	2,546
Other hard rubber goods	.....	.....	9,777	10,565
Druggists' rubber sundries	.....	45,565	48,634	52,001
Belting, hose, and packing	.....	179,164	198,803	91,743
Thread	.....	.....	47,526	59,332
Other rubber manufactures	.....	201,288	141,265	106,266
Totals, manufactured	.....	$1,137,497	.....	$1,943,057
Insulated wire and cables	.....	$750,882	1,054,745	$181,647

Foreign Exports

Crude rubber	647,444	$127,112	203,800	$20,732
Balata	35,680	18,735	48,859	31,789
Gutta percha	.....	.....	600	1,200
Rubber scrap and reclaimed	25,293	2,529	.....	.....
Rubber manufactures	.....	691	.....	.....
Chicle	943	366	.....	.....

Imports of Crude Rubber into the United States by Customs Districts

	May, 1922 Pounds	May, 1922 Value
Massachusetts	369,600	$50,722
Buffalo	1,818	92
New York	35,062,565	5,327,225
El Paso	77,000	15,400
Los Angeles	56,000	8,960
San Francisco	26,180	3,665
Oregon	44,295	9,291
Colorado	89,600	12,342
Totals	35,727,058	$5,427,697

CLINCHER TIRES PREFERRED IN THE CANARY ISLANDS

There are approximately 1,100 automobiles, including 200 motor trucks, registered in the Canary Islands, the majority of these being of American manufacture. Clincher tires are used for most of the automobiles, while about 80 per cent of the trucks are equipped with solid tires.

Exports of India Rubber Manufactures from the

EXPORTED TO—	Belting Value	Hose Value	Packing Value	Thread Value	Boots Pairs	Boots Value	Shoes Pairs	Shoes Value	Canvas Shoes with Rubber Soles Pairs	Canvas Shoes with Rubber Soles Value	Soles and Heels Value	Leather Cloth or Artificial Leather Value	Waterproofed and Auto Cloth and Auto Topping Value
EUROPE													
Belgium	$3,460	$463	$18	.....	.....	.....	264	$208	.....	.....	$35	$1,966	$35
Denmark	.....	50	277	.....	272	$1,015	336	269	8,270	$5,646	.....	44	65
Finland	3,228	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
France	1,067	15	224	$23,093	.....	.....	.....	.....	.....	.....	52	26,902	.....
Netherlands	526	165	.....	.....	.....	.....	.....	.....	899	1,607	.....	2,802	.....
Norway	1,574	28	.....	.....	.....	.....	613	352	12,492	7,952	180	2,508	71
Rumania	.....	.....	555	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Sweden	4,369	1,657	536	.....	.....	.....	.....	.....	.....	.....	.....	8,079	78
England	786	25,982	3,559	39,988	1,284	2,905	360	260	82,667	61,574	714	4,089	891
Scotland	.....	.....	.....	.....	.....	.....	.....	.....	10,776	8,504	.....	1,863	61
Ireland	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Iceland and Faroe Island	.....	.....	.....	.....	12	36	1,491	3,536	.....	.....	.....	.....	.....
Italy	.....	.....	.....	.....	.....	.....	1	2	.....	.....	.....	5,989	.....
Portugal	.....	.....	.....	.....	184	801	.....	.....	.....	.....	.....	.....	.....
Spain	.....	.....	.....	.....	.....	.....	224	159	.....	.....	.....	414	320
Switzerland	.....	.....	.....	.....	.....	.....	72	46	.....	.....	.....	.....	.....
Turkey in Europe	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	794	.....
Germany	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Gibraltar	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Greece	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	12
Latvia	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Malta, Gozo, and Cypress Islands	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Ukraine	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Czechoslovakia	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Jugoslavia, Albania, etc	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
TOTALS, EUROPE	$15,010	$28,360	$5,169	$63,081	1,752	$4,757	3,361	$4,832	115,104	$85,283	$981	$55,450	$1,533
NORTH AMERICA													
Canada—Maritime Provinces	$896	$171	$57	.....	1,069	$3,612	.....	.....	876	$526	.....	$39	$88
Quebec and Ontario	12,274	7,571	2,247	$535	94	305	62	$180	3,214	4,070	$3,137	35,999	25,159
Prairie Provinces	427	1,123	153	.....	.....	.....	.....	.....	294	608	.....	183	398
British Columbia and Yukon	931	295	283	.....	537	2,139	501	659	.....	.....	1,578	279	205
British Honduras	145	199	7	.....	.....	.....	1,231	1,310	1,269	1,288	116	.....	.....
Costa Rica	70	689	85	.....	.....	.....	200	164	.....	.....	1,660	.....	379
Guatemala	462	78	.....	.....	2	13	1,536	1,399	173	144	753	326	.....
Honduras	45	2,117	188	.....	.....	.....	.....	.....	615	650	975	.....	.....
Nicaragua	339	237	93	.....	.....	.....	.....	.....	14	17	1,092	.....	.....
Panama	81	350	99	.....	.....	.....	273	266	4,540	4,046	1,714	44	.....
Salvador	113	160	226	120	.....	.....	.....	.....	.....	.....	3,942	.....	.....
Mexico	12,898	23,816	6,124	.....	35	176	815	720	28,548	24,223	13,014	1,160	1,458
Newfoundland and Labrador	579	27	.....	.....	4,222	12,509	492	868	2,871	2,352	398	164	.....
Miquelon and St. Pierre Islands	.....	.....	.....	.....	516	1,288	.....	.....	.....	.....	.....	.....	.....
Barbados	.....	37	.....	.....	.....	.....	24	27	149	170	.....	.....	.....
Jamaica	.....	285	.....	.....	.....	.....	156	182	6,483	4,775	275	246	609
Trinidad and Tobago	.....	18	176	.....	.....	.....	.....	.....	3,591	3,486	.....	58	438
Other British West Indies	209	66	17	.....	.....	.....	144	151	1,867	1,886	.....	.....	53
Cuba	1,305	6,179	2,447	.....	30	132	360	339	39,590	24,857	9,191	1,391	1,991
Dominican Republic	.....	501	33	.....	.....	.....	.....	.....	996	1,061	317	209	377
Dutch West Indies	.....	23	.....	.....	.....	.....	120	120	5,438	4,687	182	.....	.....
French West Indies	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	146
Bermuda	29	164	.....	.....	.....	.....	.....	.....	1,919	2,475	62	.....	25
Haiti	14	95	.....	.....	.....	.....	.....	.....	276	422	.....	.....	.....
Virgin Islands of United States	.....	176	63	.....	.....	.....	48	69	1,304	1,697	34	12	.....
TOTALS, NORTH AMERICA	$30,817	$44,377	$12,298	$655	6,505	$20,174	5,962	$6,454	104,027	$83,440	$38,440	$40,110	$31,326
SOUTH AMERICA													
Argentina	$5,298	$609	$421	.....	.....	.....	96	$44	117,752	$91,931	$4,707	$4,562	$14,511
Bolivia	.....	440	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Brazil	648	7,843	802	.....	12	$53	.....	.....	.....	.....	802	400	569
Chile	1,112	1,360	.....	.....	.....	.....	450	400	.....	.....	.....	2,603	.....
Colombia	36	547	855	.....	.....	.....	278	219	1,506	1,296	777	288	22
Ecuador	.....	.....	.....	.....	.....	.....	.....	.....	5,500	3,894	616	343	.....
British Guiana	.....	22	.....	.....	.....	.....	.....	.....	1,296	1,319	.....	123	.....
Dutch Guiana	.....	.....	.....	.....	.....	.....	.....	.....	108	101	.....	.....	.....
French Guiana	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Peru	1,049	1,214	101	.....	24	77	.....	.....	.....	.....	422	.....	130
Uruguay	1,363	.....	249	.....	.....	.....	.....	.....	.....	.....	543	.....	2,989
Venezuela	45	597	401	.....	.....	.....	406	348	.....	.....	439	403	.....
TOTALS, SOUTH AMERICA	$9,551	$12,632	$2,829	.....	36	$130	1,230	$1,011	126,162	$98,541	$8,306	$8,722	$18,221
OCEANIA													
Philippine Islands	$3,405	$1,672	$1,326	.....	276	$549	1,200	$623	76,144	$56,078	$5,862	$1,179	$1,944
Australia	2,173	.....	4,136	.....	.....	.....	.....	.....	.....	.....	.....	23,804	9,972
British Oceania	.....	.....	.....	.....	.....	.....	240	230	36	57	.....	.....	.....
French Oceania	.....	75	.....	.....	.....	.....	76	88	697	738	.....	.....	.....
New Zealand	946	309	669	.....	60	380	.....	.....	.....	.....	.....	370	998
Other Oceania	.....	.....	.....	.....	.....	.....	.....	.....	330	616	.....	.....	.....
TOTALS, OCEANIA	$6,524	$2,056	$6,131	.....	336	$929	1,516	$941	77,207	$57,489	$5,862	$25,353	$12,914
ASIA													
Aden	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
British India	$2,741	$992	$1,218	.....	.....	.....	.....	.....	1,557	$2,100	.....	$565	$532
Ceylon	.....	.....	.....	.....	.....	.....	.....	.....	48	82	.....	.....	.....
Straits Settlements	1,269	.....	.....	.....	.....	.....	.....	.....	216	185	.....	152	.....
China	498	1,761	1,420	.....	.....	.....	1,416	$1,317	.....	.....	.....	3,371	2,507
Chosen	500	.....	.....	.....	.....	.....	120	94	.....	.....	.....	.....	.....
Java and Madura	.....	36	.....	.....	.....	.....	.....	.....	.....	.....	$150	2,197	4,724
Other Dutch East Indies	235	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Far Eastern Republic	.....	20	.....	.....	1,608	$6,186	.....	.....	.....	.....	.....	.....	.....
French Indo-China	.....	.....	.....	.....	.....	.....	144	192	.....	.....	.....	.....	.....
Hongkong	.....	3,562	.....	.....	165	360	744	790	2,598	2,457	.....	.....	141
Japan	370	1,351	259	$17,870	1,800	3,612	16,516	13,931	10,332	6,840	284	6,560	.....
Greece in Asia	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	617	.....
Hejaz, Arabia, etc	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Palestine and Syria	.....	.....	.....	.....	.....	.....	.....	.....	120	81	.....	.....	.....
Siam	.....	.....	.....	.....	.....	.....	.....	.....	144	189	.....	.....	.....
Kwangtung	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
TOTALS, ASIA	$5,613	$7,722	$2,897	$17,870	3,573	$10,158	18,940	$16,324	15,015	$11,934	$434	$13,462	$7,904

United States by Countries During April, 1922

Water-proofed Clothing Value	Pneumatic Casings: Automobile Number	Pneumatic Casings: Automobile Value	Pneumatic Casings: Others Value	Solid Tires: Automobile Value	Solid Tires: Others Value	Pneumatic Tubes: Automobile Number	Pneumatic Tubes: Automobile Value	Pneumatic Tubes: Others Value	Tire Repair Materials Value	Druggists' Rubber Sundries Value	Hard Rubber Goods: Battery Jars and Accessories Value	Hard Rubber Goods: Other Electrical Supplies Value	Hard Rubber Goods: Others Value	All Other Rubber Manufactures Value	Totals Value
.....	334	$6,009	.....	.....	.....	200	$418	.....	$242	$3,172	.....	.....	.....	$773	$16,799
.....	4,967	77,287	.....	$150	.....	1,522	3,172	$163	1,366	1,061	.....	.....	$374	2,368	93,307
.....	316	7,011	.....	.....	.....	230	579	.....	.....	.....	.....	.....	.....	141	10,959
$2,162	1,144	23,536	.....	.....	.....	5	15	.....	552	1,000	$1,478	.....	758	3,764	84,618
146	1,224	20,973	$1,092	1,156	.....	340	810	278	.....	1,184	23	.....	.....	485	31,247
.....	4,474	91,345	150	997	.....	2,005	5,559	.....	153	266	.....	.....	.....	2,792	113,927
.....	.....	.....	15	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3	573
.....	4,040	68,725	883	2,043	.....	2,210	4,951	127	83	2,065	.....	.....	.....	2,491	96,087
192	25,099	247,394	336	9,784	.....	7,668	17,899	346	3,381	24,022	.....	$1,335	6,215	44,773	496,425
117	169	1,862	.....	.....	.....	100	144	.....	.....	500	.....	.....	.....	4,074	17,125
.....	157	1,026	.....	.....	.....	115	256	.....	.....	.....	.....	.....	.....	1,614	2,896
.....	106	1,680	.....	.....	.....	82	150	.....	.....	.....	.....	.....	.....	.....	5,402
.....	822	12,761	2,499	.....	.....	506	970	57	.....	.....	.....	.....	.....	659	22,937
.....	1,013	17,220	.....	.....	.....	359	785	.....	.....	.....	.....	.....	.....	114	18,920
.....	1,857	45,995	.....	5,893	.....	2,684	5,495	.....	.....	956	12	.....	.....	758	60,002
.....	183	3,135	219	64	.....	91	169	.....	.....	200	.....	.....	.....	.....	3,833
.....	170	1,865	.....	.....	.....	218	368	.....	.....	.....	.....	.....	.....	.....	3,027
.....	5	300	.....	.....	.....	.....	.....	.....	.....	980	.....	.....	.....	.....	1,280
.....	54	610	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	610
.....	48	689	.....	.....	.....	46	75	.....	.....	.....	.....	.....	.....	.....	776
.....	9	153	.....	.....	.....	12	23	.....	.....	.....	.....	.....	.....	.....	176
.....	384	4,071	.....	250	.....	20	39	.....	.....	.....	.....	.....	.....	.....	4,360
.....	140	2,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2,000
.....	276	4,919	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4,919
.....	370	6,008	.....	.....	.....	436	928	.....	30	.....	.....	.....	.....	.....	6,966
$2,617	47,361	$646,574	$5,194	$20,337	.....	18,849	$42,805	$971	$5,807	$35,406	$1,513	$1,335	$7,347	$64,809	$1,099,171
$614	154	$2,987	$33	.....	.....	150	$334	.....	$48	$345	$41	.....	$229	$1,967	$11,987
991	5,548	82,655	576	$9,097	$30	10,540	22,535	$75	3,765	15,086	17,364	$1,834	10,060	112,947	368,492
1,888	481	5,713	.....	214	.....	160	359	41	157	1,970	1,303	.....	1,809	6,039	22,385
72	61	1,397	22	1,471	.....	6	22	.....	67	301	.....	20	168	2,803	12,712
.....	24	259	.....	.....	.....	.....	.....	.....	13	13	.....	.....	44	4	3,398
648	63	1,058	.....	.....	.....	73	166	.....	.....	13	.....	.....	.....	30	4,962
.....	103	2,042	44	68	627	70	184	32	.....	.....	.....	.....	.....	160	6,332
140	44	987	79	213	.....	50	144	40	.....	197	.....	.....	32	5	5,812
.....	52	1,111	20	.....	.....	65	124	.....	.....	44	.....	.....	4	37	3,118
506	780	11,540	92	454	.....	698	1,308	153	183	346	.....	.....	.....	928	22,110
.....	401	4,724	.....	538	.....	396	611	.....	.....	.....	.....	.....	.....	215	10,649
12,106	2,738	46,353	2,853	25,792	635	5,566	11,669	205	1,578	2,095	.....	292	1,757	10,296	199,220
4,838	515	7,520	122	45	.....	607	1,158	.....	44	51	.....	.....	.....	633	31,308
557	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1,845
51	45	525	.....	.....	99	57	117	.....	.....	.....	.....	.....	.....	.....	1,026
378	321	4,237	.....	1,181	.....	201	355	.....	.....	.....	.....	.....	15	23	12,561
.....	379	5,659	20	182	.....	379	1,025	.....	16	49	.....	54	.....	147	11,328
27	13	215	78	.....	127	20	36	.....	75	278	.....	77	.....	51	3,346
11,406	7,686	100,198	1,418	6,817	332	7,015	11,730	58	861	5,291	106	572	50	7,337	194,008
127	279	2,909	125	.....	.....	82	239	.....	100	127	.....	229	.....	253	6,607
75	110	1,274	.....	.....	.....	54	131	.....	15	5	.....	.....	.....	29	6,541
.....	379	4,498	.....	1,855	.....	98	187	.....	.....	.....	.....	.....	.....	4	6,690
.....	.....	.....	.....	.....	62	.....	.....	.....	.....	146	.....	.....	.....	272	3,235
.....	118	1,673	26	.....	305	103	217	.....	5	91	.....	.....	.....	73	2,921
.....	41	366	32	.....	.....	42	76	13	.....	.....	.....	.....	.....	18	2,556
$34,424	20,335	$289,900	$5,540	$47,927	$2,217	26,432	$52,727	$617	$6,927	$26,448	$18,814	$3,078	$14,168	$144,271	$955,149
.....	5,899	$81,595	$3	$198	$2,531	8,685	$19,534	.....	$3,208	$5,218	$50	$162	.....	$4,818	$239,400
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	440
$30	3,511	37,124	.....	1,952	.....	4,686	4,765	.....	.....	213	44	.....	$1,185	3,044	59,474
.....	515	7,662	.....	104	421	409	986	.....	180	.....	.....	.....	.....	749	15,577
.....	428	6,223	117	42	.....	340	1,044	$177	53	195	.....	.....	.....	19	11,910
.....	55	749	.....	.....	.....	50	93	.....	159	35	.....	.....	.....	.....	5,881
.....	88	1,203	29	178	.....	.....	.....	6	.....	.....	.....	.....	.....	.....	2,880
122	33	196	.....	.....	.....	36	61	.....	.....	.....	.....	.....	.....	20	500
.....	2	62	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	62
.....	968	15,349	.....	1,077	.....	472	1,083	.....	51	43	.....	247	.....	1,113	21,956
1,886	1,574	18,000	.....	.....	.....	1,160	1,626	.....	68	.....	.....	.....	.....	719	27,443
.....	1,269	21,145	257	.....	.....	1,336	2,589	8	73	888	.....	.....	22	373	27,588
$2,038	14,342	$189,308	$406	$3,551	$2,952	17,174	$31,773	$191	$3,792	$6,592	$94	$409	$1,207	$10,855	$413,111
$447	3,054	$40,589	$781	$2,481	$11,861	1,487	$3,267	$200	$642	$641	.....	.....	$154	$7,175	$140,976
852	1,703	30,549	.....	8,862	1,329	1,577	3,100	.....	77	544	$250	$119	465	1,736	87,968
.....	16	181	.....	.....	.....	28	76	.....	.....	.....	12	.....	.....	.....	556
18	35	525	.....	.....	.....	41	76	42	22	.....	.....	.....	.....	.....	1,584
.....	3,148	50,602	40	10,173	.....	2,777	5,764	15	3,633	269	80	.....	.....	80	74,328
.....	4	77	.....	.....	.....	6	15	.....	.....	23	.....	.....	.....	.....	731
$1,317	7,960	$122,623	$821	$21,516	$13,190	5,916	$12,298	$257	$4,374	$1,477	$342	$119	$619	$8,991	$306,143
.....	88	$882	.....	.....	.....	48	$75	.....	.....	.....	.....	.....	.....	.....	$957
.....	567	6,224	$275	$2,781	.....	451	1,589	.....	.....	$940	.....	.....	.....	$120	20,077
.....	65	785	76	.....	.....	20	37	$23	$109	.....	.....	.....	.....	37	1,149
.....	599	5,214	.....	144	.....	139	368	.....	.....	246	.....	.....	.....	112	7,690
.....	646	10,078	.....	1,225	.....	327	633	.....	.....	549	.....	$17	.....	924	24,300
.....	219	1,900	.....	.....	.....	207	609	.....	.....	.....	.....	.....	.....	.....	3,103
.....	605	11,694	305	705	.....	70	210	122	.....	75	.....	.....	.....	411	20,629
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	235
$3,377	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	18	9,601
.....	30	210	.....	.....	.....	30	60	.....	.....	.....	.....	.....	.....	.....	462
.....	30	882	.....	.....	.....	.....	.....	.....	297	5	.....	.....	.....	16	8,510
.....	1,185	17,142	.....	538	.....	.....	.....	200	.....	215	.....	112	.....	15,452	84,736
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	617
.....	10	108	.....	.....	.....	12	18	.....	.....	.....	.....	.....	.....	.....	126
.....	587	6,822	.....	.....	.....	364	785	.....	.....	837	.....	.....	.....	675	9,200
.....	18	486	.....	.....	.....	34	102	12	45	.....	.....	.....	.....	.....	834
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	40	40
$3,377	4,649	$62,427	$656	$5,393	.....	1,702	$4,486	$357	$451	$2,867	.....	$129	.....	$17,805	$192,266

Exports of India Rubber Manufactures from the United

EXPORTED TO—					Boots		Shoes		Canvas Shoes with Rubber Soles		Soles and Heels	Leather Cloth or Artificial Leather	Waterproofed and Auto Cloth and Auto Topping
	Value	Value	Value	Value	Pairs	Value	Pairs	Value	Pairs	Value	Value	Value	Value
AFRICA													
British West Africa	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
British South Africa	$1,879	$1,010	.....	.....	.....	.....	1,230	$753	.....	.....	.....	$173	$256
British East Africa	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Canary Islands	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	334	.....
Egypt	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	271	.....
Other French Africa	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Portuguese East Africa	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
TOTALS, AFRICA	$1,879	$1,010	.....	.....	.....	.....	1,230	$753	.....	.....	.....	$778	$256
GRAND TOTALS	$69,394	$96,157	$29,324	$81,606	12,202	$36,148	32,239	$30,315	437,515	$336,687	$54,023	$143,875	$72,154

Compiled by the Bureau of Foreign Commerce, Department of Commerce, Washington, D. C.

Rubber Statistics for the Dominion of Canada

Imports of Crude and Manufactured Rubber

	February			
	1921		1922	
	Pounds	Value	Pounds	Value
UNMANUFACTURED—*free*				
Rubber, gutta percha, etc.				
From United Kingdom	26,902	$3,707	118,901	$23,537
United States	782,934	151,015	842,744	144,900
Brazil	72,908	12,659	.....	.....
British East Indies, Ceylon	.....	.....	44,777	9,212
Straits Settlements	903,500	223,679	.....	.....
Total	1,786,244	$391,060	1,006,422	$177,649
Rubber recovered	12,223	$2,148	198,806	$22,253
Rubber, powdered, and rubber or gutta percha scrap	187,985	19,924	114,207	5,593
Rubber substitutes	64,961	16,597	69,121	8,766
Totals, unmanufactured	2,051,413	$429,729	1,388,556	$214,261
PARTLY MANUFACTURED				
Hard rubber sheets and rods	12,896	$11,659	237	$221
Hard rubber tubes	.....	1,346	.....	2,052
Rubber thread, not covered	197	257	3,308	4,398
Totals, partly manufactured	13,093	$13,262	3,545	$6,671
MANUFACTURED				
Belting	.....	$9,283	.....	$3,135
Hose	.....	8,630	.....	7,318
Packing	.....	3,889	.....	3,412
Boots and shoes	.....	7,285	.....	13,929
Clothing, including waterproofed	.....	18,873	.....	9,734
Gloves	.....	1,874	.....	953
Hot-water bottles	.....	2,319	.....	1,359
Tires, solid	.....	8,501	.....	6,512
Tires, pneumatic	.....	236,442	.....	108,766
Inner tubes	.....	17,668	.....	16,179
Elastic, round or flat	.....	24,857	.....	29,086
Mats and matting	.....	296	.....	1,062
Cement	.....	1,907	.....	2,708
Other rubber manufactures	.....	102,332	.....	75,900
Totals, manufactured	.....	$444,156	.....	$280,053
Totals, rubber imports	2,064,506	$887,147	1,392,101	$500,985
Insulated wire and cables				
Wire and cables covered with cotton, linen, silk, rubber, etc.	.....	$20,077	.....	$17,162
Copper wire and cables covered as above	.....	5,905	.....	7,815
Chicle	90,794	51,925	5,105	1,808
Fillets	.....	47	.....	362
Webbing	.....	9,095	.....	35,956
Fountain pens	.....	1,099	.....	2,452

Exports of Domestic and Foreign Rubber Goods

	February			
	1921		1922	
	Produce of Canada Value	Reexports of Foreign Goods Value	Produce of Canada Value	Reexports of Foreign Goods Value
UNMANUFACTURED				
Waste rubber	$3,663	.....	$2,667	.....
MANUFACTURED				
Belting	8,097	.....	10,463	.....
Hose	13,090	.....	16,240	.....
Boots and shoes	70,359	$1,228	83,694	$15
Clothing, including waterproofed	4,116	.....	2,212	32
Tires, pneumatic	166,532	.....	328,069	.....
Tires	7,978	102	8,057	1,824
Other manufactures	20,209	4,549	34,765	554
Totals, manufactured	$290,381	$5,879	$483,500	$2,425
Totals, rubber exports	$294,044	$5,879	$486,167	$2,425

Imports of Crude and Manufactured Rubber

	March			
	1921		1922	
	Pounds	Value	Pounds	Value
UNMANUFACTURED—*free*				
Rubber, gutta percha, etc.				
From United Kingdom	55,266	$11,076	313,107	$51,119
United States	728,275	125,102	1,697,345	269,916
British East Indies				
India	.....	.....	33,600	4,596
Ceylon	.....	.....	44,817	9,394
Straits Settlements	810,162	188,413	44,880	11,220
Belgium	29,461	11,700	.....	.....
Brazil	97,555	13,916	.....	.....
Total	1,720,719	$350,207	2,133,749	$346,245
Rubber, recovered	44,453	6,821	155,012	17,290
Rubber, powdered, and rubber or gutta percha scrap	61,318	3,328	201,981	13,412
Rubber substitutes	60,035	8,817	64,123	6,505
Totals, unmanufactured	1,886,525	$369,173	2,554,865	$383,457
PARTLY MANUFACTURED				
Hard rubber sheets and rods	21,086	6,112	1,700	1,204
Hard rubber tubes	.....	7,828	.....	1,784
Rubber thread, not covered	1,679	2,251	12,948	14,190
Totals, partly manufactured	22,765	$16,191	14,648	$17,178
MANUFACTURED				
Belting	.....	$18,416	.....	$12,723
Hose	.....	10,013	.....	10,446
Packing	.....	5,814	.....	6,677
Boots and shoes	.....	12,233	.....	10,566
Clothing, including waterproofed	.....	23,302	.....	23,583
Gloves	.....	1,991	.....	1,490
Hot-water bottles	.....	2,926	.....	452
Tires, solid	.....	11,165	.....	12,006
Tires, pneumatic	.....	132,070	.....	127,201
Inner tubes	.....	15,183	.....	13,387
Elastic, round or flat	.....	26,320	.....	52,069
Mats and matting	.....	543	.....	138
Cement	.....	5,271	.....	7,949
Other rubber manufactures	.....	155,517	.....	191,563
Totals, manufactured	.....	$420,764	.....	$470,250
Total rubber imports	1,909,290	$806,128	2,569,513	$870,885

States by Countries During April, 1922—*Continued*

	Pneumatic Casings			Solid Tires		Pneumatic Tubes					Hard Rubber Goods					
	Automobile					Automobile										
Water-proofed Clothing Value	Number	Value	Others Value	Automobile Value	Others Value	Number	Value	Others Value	Tire Repair Materials Value	Druggists' Rubber Sundries Value	Battery Jars and Accessories Value	Other Electrical Supplies Value	Others Value	All Other Rubber Manufactures Value	Totals Value
.....	944	$20,271	.....	.....	.....	1,220	$4,194	.....	.....	.....	.....	.....	.....	.....	$24,465
.....	2,039	27,393	.....	$690	.....	1,132	2,203	.....	$117	$254	.....	.....	.....	$109	34,837
.....	465	5,207	.....	.....	.....	70	122	.....	.....	.....	.....	.....	.....	.....	5,329
.....	187	2,922	.....	.....	.....	45	150	.....	313	.....	.....	.....	.....	.....	3,719
.....	751	7,020	.....	1,225	.....	636	3,664	.....	.....	.....	.....	.....	.....	.....	12,180
.....	29	698	.....	.....	.....	.....	.....	.....	.....	91	.....	.....	.....	.....	789
.....	.....	.....	$26	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	26
.....	4,415	$63,511	$26	$1,915	.....	3,103	$10,333	.....	$430	$345	.....	.....	.....	$109	$81,345
$43,773	99,062	$1,374,343	$12,643	$100,639	$18,359	73,176	$154,422	$2,393	$21,781	$73,135	$20,763	$5,070	$23,341	$246,840	$3,047,185

Rubber Statistics for the Dominion of Canada—*Cont'd*

Insulated wire and cables				
Wire and cables covered with cotton, linen, silk, rubber, etc.	.....	$10,041	.....	$10,132
Copper wire and cables, covered as above	.....	14,813	.....	30,876
Fillets	.....	595	.....	65
Webbing	.....	30,294	.....	43,342
Fountain pens	.....	3,263	.....	2,919

Exports of Domestic and Foreign Rubber Goods

	March			
	1921		1922	
	Produce of Canada Value	Reexports of Foreign Goods Value	Produce of Canada Value	Reexports of Foreign Goods Value
UNMANUFACTURED				
Crude and waste rubber	$4,976	.....	$4,655	.....
MANUFACTURED				
Belting	228	.....	14,589	.....
Hose	3,903	.....	4,090	.....
Boots and shoes	58,205	6,672	118,873	43
Clothing, including waterproofed	299	.....	444	58
Tires, pneumatic	97,208	.....	404,016	.....
Tires	9,571	484	17,226	219
Other manufactures	11,008	12,093	54,395	5,631
Totals, manufactured	$180,422	$19,249	$613,633	$5,951
Totals, rubber exports	$185,398	$19,249	$618,288	$5,951

United Kingdom Rubber Statistics

Imports

	April			
	1921		1922	
	Pounds	Value	Pounds	Value
UNMANUFACTURED				
Crude rubber				
From—				
Straits Settlements	7,922,200	£395,451	1,644,600	£63,949
Federated Malay States	7,275,800	404,318	5,788,400	265,001
British India	711,700	38,523	609,500	26,219
Ceylon and dependencies	3,210,800	164,446	1,391,300	56,037
Other Dutch possessions in Indian Seas	1,366,300	66,505	445,000	19,717
Dutch East Indies (except other Dutch possessions in Indian Seas)	1,997,000	112,983	1,015,500	43,843
Other countries in East Indies and Pacific not elsewhere specified	254,700	13,026	361,300	13,695
Brazil	160,300	7,375	813,000	36,870
Peru	.....	.....	.....	.....
South and Central America (except Brazil and Peru)	15,100	597	20,800	866
West Africa				
Gold Coast	7,600	382	.....	.....
French West Africa	3,300	124	.....	.....
Other parts of West Africa	59,600	2,821	18,600	750
East Africa (including Madagascar)	89,300	4,202	1,000	40
Other countries	87,000	4,167	12,100	460
Totals	23,160,700	£1,214,920	12,121,100	£527,447
Waste and reclaimed rubber	77,100	1,200	55,000	579
Gutta percha and balata	410,000	76,306	377,200	46,898
Rubber substitutes	4,000	147	1,100	40
Totals, unmanufactured	23,651,800	£1,292,573	12,554,400	£574,964

	April			
	1921		1922	
	Pounds	Value	Pounds	Value
MANUFACTURED				
Boots and shoes, *dozen pairs*	12,639	£23,733	12,488	£21,721
Waterproof clothing	.....	667	.....	2,709
Insulated wire	.....	2,853	.....	18,023
Tires and tubes	.....	163,562	.....	426,883
Other rubber manufactures	.....	49,232	.....	87,247
Totals, manufactured	.....	£240,047	.....	£556,583

Exports

UNMANUFACTURED				
Waste and reclaimed rubber	190,200	£5,665	426,300	£5,654
Rubber substitutes	47,000	1,371	17,100	538
Totals, unmanufactured	237,200	£7,036	443,400	£6,192
MANUFACTURED				
Boots and Shoes, *dozen pairs*	6,552	£15,263	10,962	£19,475
Waterproof clothing	.....	69,128	.....	103,100
Insulated wire	.....	162,914	.....	49,931
Submarine cables	.....	387,949	.....	23,020
Tires and tubes	.....	185,997	.....	239,652
Other rubber manufactures	.....	216,740	.....	245,239
Totals, manufactured	.....	£1,037,991	.....	£680,417

Exports—Colonial and Foreign

UNMANUFACTURED				
Crude rubber				
To Sweden, Norway and Denmark	127,800	£7,074	146,400	£5,842
Germany	1,799,800	74,992	1,446,600	53,776
Belgium	81,200	4,765	346,400	12,216
France	601,700	28,762	1,848,300	74,504
Spain	12,200	550	44,000	1,662
Italy	225,900	9,428	558,100	21,169
Austria	148,200	6,757	22,300	1,150
Other European countries	98,300	3,395	63,400	2,157
United States	4,493,300	207,980	2,263,900	82,797
Canada	.....	.....	36,100	1,160
Other countries	3,300	247	71,600	3,386
Totals	7,591,700	£343,950	6,847,100	£259,819
Waste and reclaimed rubber	200	14	300	8
Gutta percha and balata	27,200	5,462	570	6,600
Rubber substitutes	.....	127	.....	163
Totals, unmanufactured	7,619,100	£349,553	6,847,970	£266,590
MANUFACTURED				
Boots and shoes—*dozen pairs*	285	1,177	164	735
Waterproof clothing	.....	330	.....	.....
Tires and tubes	.....	57,714	.....	31,494
Other manufactures	.....	3,754	.....	5,066
Totals, manufactured	.....	£62,975	.....	£37,295

Plantation Rubber Exports from Malaya

	January 1 to April 30, 1922			January 1 to May 11, 1922 Port	
	Singapore Pounds	Malacca Pounds	Penang Pounds	Swettenham Pounds	Totals Pounds
To United Kingdom	1,449,500	4,047,100	1,536,400	6,282,343	13,315,343
The Continent	8,553,500	409,300	1,212,100	335,032	10,509,932
Japan	11,142,600	.....	56,000	.....	11,198,600
United States	88,672,800	10,400,100	8,122,900	1,337,818	108,533,618
British Possessions	3,081,000	.....	.....	300,984	3,381,984
Other countries	169,000	.....	.....	.....	169,000
Totals	113,068,400	14,856,500	10,927,400	8,256,177	147,108,477

United States Crude and Waste Rubber Imports for 1922 (By Months)

	Plantations	Parás	Africans	Centrals	Guayule	Manicoba and Matto Grosso	Totals 1922	Totals 1921	Balata	Miscellaneous	Waste
January ....tons	20,774	916	161	16	.....	.....	21,867	14,177	42	126	85
February	27,270	1,347	301	14	.....	41	28,973	8,641	28	448	6
March	27,711	451	326	3	154	57	28,702	14,416	17	479	61
April	13,910	462	5	2	65	.....	14,444	17,269	8	122	.....
May	19,485	1,072	3	.....	62	.....	20,622	10,732	15	855	117
Totals, 5 months, 1922...tons	109,150	4,248	796	35	281	98	114,608	.....	110	2,030	269
Totals, 5 months, 1921.....	58,961	5,511	689	13	58	3	.....	65,235	199	808	1,501

Compiled by The Rubber Association of America, Inc.

Plantation Rubber Exports from Java*

	March 1921	March 1922	Three Months Ended March 31 1921	Three Months Ended March 31 1922
To Netherlands ....kilos	627,000	603,000	2,161,000	1,113,000
Great Britain	433,000	788,000	2,256,000	1,553,000
Germany	55,000	98,000	117,000	134,000
France	.....	11,000	.....	11,000
Italy	.....	.....	1,000	7,000
Belgium	.....	.....	5,000	.....
United States	739,000	791,000	1,903,000	3,633,000
Singapore	294,000	212,000	925,000	779,000
Japan	52,000	5,000	95,000	65,000
Australia	6,000	56,000	208,000	56,000
Other countries	.....	.....	.....	.....
Totals ....kilos	2,206,000	2,564,000	7,671,000	7,351,000
Ports of origin:				
Tandjong Priok ....kilos	1,033,000	910,000	3,620,000	2,958,000
Samarang	72,000	39,000	126,000	77,000
Soerabaya	883,000	1,253,000	3,242,000	3,405,000

*The February figures are verified.

Exports of Crude Rubber from Pará and Manáos, Brazil, and Iquitos, Peru, to the United States and Europe

Grade	March, 1922 To United States Pounds	March, 1922 To Europe Pounds	April, 1922 To United States Pounds	April, 1922 To Europe Pounds
From Pará				
Fine	121,823	727,560	528,637	895,048
Medium	31,693	13,102	110,238	48,927
Coarse	226,044	40,031	203,354	51,455
Caucho	82,012	744,042	204,256	195,982
Totals	461,572	1,524,735	1,046,485	1,191,412
From Manáos				
Fine	35,274	1,169,140	322,212	621,101
Medium	59,743	86,260	93,399	51,658
Coarse	125,516	57,677	202,100	60,828
Caucho	274,043	249,724	115,868	405,428
Totals	494,576	1,562,801	733,579	1,139,015
From Iquitos				
Fine	96,359	1,192	227,230	.....
Medium	.....	.....	3,858	.....
Coarse	4,766	890	46,661	.....
Caucho	16,754	1,082	95,035	.....
Totals	117,879	3,164	372,784	.....
Total exports	1,074,027	3,090,700	2,152,848	2,330,427

Grand total, March, 1922....pounds		4,164,727
Grand total, March, 1921....		2,802,506
Increase, March, 1922....pounds		1,362,221

NOTE: No exports of rubber from Itacoatiara, Brazil, during the month of March, 1922, while the figures for March, 1921, include 6,724 pounds shipped from there to Europe.

Grand total for April, 1922....pounds		4,483,275
Grand total for April, 1921....		3,244,080
Increase in April, 1922....pounds		1,239,195

Rubber Division, Bureau of Foreign & Domestic Commerce, Washington, D. C.

The Market for Rubber Scrap

New York

There is scarcely any sale for rubber scrap, so stagnant is the market in the face of the continued low levels for crude rubber grades. There has been a limited business in red tubes for export and some movement of boots and shoes for domestic consumption.

The most important development in the scrap rubber trade is the announcement of the success of the fight of the National Association of Waste Material Dealers to have scrap rubber put in sixth class as against fifth class at present. This concerns only carload shipments in official territory, and will go into effect August 26, but in conjunction with the 10 per cent reduction to go into effect July 1, it will mean a considerable saving to the trade, and in the present low price market will tend to accelerate business.

Quotations for Carload Lots Delivered

June 26, 1922

Prices subject to change without notice

Boots and Shoes			
Boots and shoes....lb.	*$0.02¾ @	$0.03	
Trimmed arctics....lb.	*.02 @		
Untrimmed arctics....lb.	*.01¾ @		
Hard Rubber			
Battery jars, black compound....lb.	@		
No. 1, bright factory....lb.	*.05 @	.06	
Inner Tubes			
No. 1....lb.	*.03¾ @	.04	
Compounded....lb.	*.02¾ @	.03	
Red....lb.	*.03 @		
Mechanicals			
Black scrap, mixed, No. 1....lb.	*.02¼ @	.03	
No. 2....lb.	*.01½ @	.02	
Heels....lb.	*.02½ @	.03	
Horse-shoe pads....lb.	*.02½ @	.03	
Hose, air brake....lb.	*.01 @	.01½	
fire, cotton lined....lb.	*.01 @		
garden....lb.	.07 @		
Matting....lb.	*.01 @		
Red packing....lb.	*.04½ @	.05	
Red scrap, No. 1....lb.	*.07 @	.08	
No. 2....lb.	*.05½ @	.06	
White scrap, No. 1....lb.	*.07 @	.07½	
No. 2....lb.	*.06 @	.06½	
Tires			
PNEUMATIC—			
Auto peelings....lb.	*.01½ @		
Bicycle....lb.	*.01 @	.01¼	
Standards white auto....lb.	*.02¼ @	.02¾	
Mixed auto....lb.	*.00¾ @	.01	
Stripped, unguaranteed....lb.	*.01 @	.01½	
White, G. & G., M. & W., and U. S....lb.	*.02¾ @		
SOLID—			
Carriage....lb.	*.02¼ @	.02¾	
Irony....lb.	@		
Truck, clean....lb.	*.01½ @	.02	

*Nominal.

SPONGE RUBBER HEAT INSULATION

The report of the National Physical Laboratory, London, England, on the value of expanded vulcanized rubber as a nonconductor for the insulation of cold storage chambers or refrigerators, indicates that the highly expanded or cellular form known as Onazote[1] is far more effective than any of the usual materials employed for this purpose.

The walls of cold chambers packed with this form of rubber product transmitted only one and one-half times the amount of heat that would have passed had a vacuum been used as insulation. The rubber insulation has but half the specific gravity of cork.

[1] See THE INDIA RUBBER WORLD, August 1, 1921, page 819.

The Market for Cotton and Other Fabrics

New York

AMERICAN COTTON. During the past month prices of middling spot cotton have passed through a series of rapid advances and declines in a persistent upward movement resembling that of May, the market being described as nervous and irregular with higher prices probable. From a statistical standpoint the position of cotton continues to strengthen.

EGYPTIAN COTTON. The recent advance in short cottons has been reflected in the extra staples. Egyptian medium grades of Sakellaridis are worth about 38½ cents ex duty and the low grades are practically unobtainable. Upper Egyptians in the grades required for tire fabric are offered from 30 to 30¾ cents with very little inquiry. Apparently present fabric prices will not warrant the mills paying 30 cents for cotton.

The tariff at present in force, of seven cents a pound on foreign cotton of 1⅛ inch staple, is embodied in the permanent tariff bill now before Congress and is aimed at Egyptian Sakellaridis. In the opinion of Egyptian cotton trade experts, this duty will have no adverse effect on imports of Egyptian cotton. It is not a question of price but one of demand, and not until a substitute is found will imports of Egyptian cotton fall off. Meanwhile the public will pay the multiplied duty in the price of the goods.

ARIZONA COTTON. Pima grades are less advanced in price than other extra staples. Stocks are rapidly decreasing and this cotton seems to be about the cheapest on the markets compared with Egyptian and Sea Island.

SEA ISLAND. Good lots are few and far between. Average extra choice is offered at 45 cents.

DUCKS, DRILLS, AND OSNABURGS. The demand is broadening and prices will show further substantial advances over the next thirty days.

RAINCOAT FABRICS. The gray cloth market has advanced and without question fabrics will bring higher figures. Business is quiet but raincoat manufacture is starting up and the fall season will be fair.

SHEETINGS. The market for sheetings is active, goods are moving in good volume with higher prices confidently expected.

TIRE FABRICS. During the past two months tire fabric demand has increased. There is keen competition for orders and it has not been possible to advance the price in comformity with that of raw cotton. If cotton stays up, however, tire fabrics will certainly advance. Competition in the tire business is reflected in the demand for fabrics of the lower priced grades.

TIRE
FABRICS

JENCKES
SPINNING
COMPANY

PAWTUCKET
RHODE ISLAND

AKRON OFFICE
Second National Building

NEW YORK OFFICE
Fisk Building
Broadway at 57th Street

New York Quotations

June 26, 1922

Prices subject to change without notice

Burlaps

40—7-ounce	100 yds.		@
40—7½-ounce		$6.30	@$6.35
36—7½-ounce			@
40—8-ounce		6.35	@ 6.50
40—10-ounce		9.50	@ 9.60
40—10½-ounce		9.60	@10.00

Drills

38-inch 2.00-yard	yard	.19½@
40-inch 3.47-yard		.11⅞@
52-inch 1.90-yard		.22⅛@
60-inch 1.52-yard		.27⅝@

Duck

CARRIAGE CLOTH

38-inch 2.00-yard enameling duck	yard	.20½@
40-inch 1.47-yard		.27¼@
72-inch 16.66-ounce		.44⅞@
72-inch 17.21-ounce		.46¼@

MECHANICAL

Hose	pound	.36 @
Belting		.37 @

Osnaburgs

40-inch 2.35-yard	.17⅛@
40-inch 2.48-yard	.16¼@
37½-inch 2.42-yard	.16⅝@

Hollands, 40-inch

DEAD FINISH

Standard, 36-inch, white	.18	@
36-inch, colors	.18	@
42-inch, white	.22	@
42-inch, colors	.22	@

FLAT FINISH

Imperial, 36-inch, white	.14	@
36-inch, colors	.14	@
42-inch, white	.17	@
42-inch, colors	.17	@

Fabric Market—*Continued*

Raincoat Fabrics

COTTON

Bombazine 64 x 60	yard	$0.11¾	@
60 x 48		10¾	@
Cashmeres, cotton and wool, 36-inch, tan		.55	@
Plaids 60 x 48		.11½	@
56 x 44		.11	@
Surface prints 60 x 48		.12¼	@
64 x 60		.13	@

Sheetings, 40-inch

48 x 48, 2.50-yard	yard	.14	@	.14½
48 x 48, 2.85-yard		.12	@	.12½
64 x 68, 3.15-yard		.13½	@	.14
56 x 60, 3.60-yard		.11	@	.11¼
48 x 44, 3.75-yard		.10½	@	

Silks

Canton, 38-inch	yard	.29½	@
Schappe, 36-inch		.45	@

Tire Fabrics

BUILDING

17¼-ounce Sakellaridis, combed	pound	.80	@	
17¼-ounce Egyptian, combed		.68	@	.70
17¼-ounce Egyptian, carded		.63	@	.65
17¼-ounce Peeler, combed		.70	@	.72
17¼-ounce Peeler, carded		.54	@	.55

CORD

15-ounce Egyptian, combed	pound	.70	@	.73

BICYCLE

8-ounce American	pound		@
10-ounce American			@

CHAFER

9¼-ounce Sea Island	pound		@
9¼-ounce Egyptian, carded		$0.71	@
9¼-ounce Peeler, carded		.62	@

IS THE WORLD APPROACHING A COTTON SHORTAGE?

According to W. Irving Bullard, treasurer of the National Association of Cotton Manufacturers, there are signs of a cotton shortage, if the predictions regarding increased activity in this industry during the 1922-1923 season are fulfilled. During this season the consumption will be about 20,000,000 bales, while the carryover of about 7,450,000 bales at the end of the season will be just about normal.

Mr. Bullard states that in 1914, with crops of record size, the United States contributed 16,134,000 bales, while in this past year this country supplied a crop only about half as large. During the current season the world has produced only about 75 per cent as much as it is consuming in the same period, and for the balance has drawn on the excessive carryover that weighed so heavily on the market last summer. Mr. Bullard predicts that unless this country produces a really big crop of cotton this year, say 14,000,000 or 15,000,000 bales, exclusive of linters, the cotton trade may experience a disastrous shortage of the staple before the end of the 1922-1923 cotton season.

For ten months ended May 31, 1922, about 4,950,000 bales were consumed while stocks were nearly 4,000,000 bales.

The Market for Chemicals and Compounding Ingredients

New York

TRADE in most lines of rubber compounding ingredients is active at firm prices. There has been a slight rise in the price of litharge. Improvement in the rubber trade is particularly noted in the call for such materials as litharge, zinc oxide, lithopone and gas black. For the most part the list shows larger inquiry and better trading conditions.

ANILINE. There is an excess supply of stock, and movement is very light. Prices are low and weak.

ANTIMONY SULPHURET. Demand is almost wholly absent. Crimson is the only grade that is in request. Stocks are large and low prices do not stimulate interest.

BARYTES. There is an active seasonal market with no change in prices. Large importations of German barytes are being absorbed by makers of lithopone.

BENZOL. Advance in prices of benzol have not deterred the excessive demand which is in short supply both as to domestic and export requirements.

BLANC FIXE. Similar market conditions prevail as in the case of barytes. Production is in good volume, and requirements exceed the supply, resulting in strong prices.

CARBON BISULPHIDE. The rubber trade is taking carbon bisulphide in fair volume at moderate prices. The principal outlet for this material is as insecticide in agricultural operations.

CARBON BLACK. The situation is an aggravated one. Demand at home and abroad is far in advance of the supply which is more or less hampered by actual or prospective legislative restriction. Sixteen cents is said to be a low contract price for carloads, with small lots considerably higher. The material is an essential to tire makers. All around conditions have placed producers in a strong price position as spot supplies are much restricted.

CARBON TETRACHLORIDE. This material is in fairly active request by the rubber trade at prices unchanged during the past month.

CHINA CLAY. Freight rates still hinder movement of domestic grades. Impending rate reductions promise to give relief soon in the unequal competition of china clay, barytes, etc., as against these materials from foreign sources.

DRY COLORS. There have been no price reductions. The market tone is steady and demand very good.

GASOLINE. Supplies are ample, prices high, firm, and unchanged since last month. A later report states that an advance of one cent a gallon may be expected.

LITHARGE. The demand is steadily improving notwithstanding an advance of ¼-cent per pound.

LITHOPONE. Production of lithopone continues at full capacity. Importations also are large. Makers have greatly improved the quality of their output in the past year. Present prices are expected to hold through the third quarter-year.

SOLVENT NAPHTHA. Supplies are not abundant. An advance of two cents a gallon has been recorded without impairing excellent consumer requirements.

SUBLIMED LEAD. The condition is essentially the same as in the case of litharge as regards trade and price advance.

SULPHUR. Prices remain unchanged. Trade activity is reported as of steady routine character.

SULPHUR CHLORIDE. Very little interest manifest even at present low prices.

TALC. Both foreign and domestic grades are in good request with no overstock in supply.

WHITING. There have been some imports but stocks are kept low by the steady routine movement of consumers' trade.

ZINC OXIDE. Although zinc metal has advanced somewhat, the price for oxide has remained unchanged. There is a very active rubber trade absorption of the supply, particularly for the lead-free oxide for the tire trade. The leaded variety is more acceptable for the manufacture of mechanical rubber goods because of its lesser price.

Accelerators, Organic

Accelerene (f. o. b. English port)	lb.	13s.	@
Adeo	lb.	$0.75	@
Aldehyde ammonia crystals	lb.	.95	@
Aniline (f. o. b.) factory	lb.	.15	@ .18
Diphenyl guanidine	lb.	1.40	@
Ethylidene aniline	lb.	.85	@
Excellerex	lb.	.45	@ .50
Formaldehyde aniline	lb.	.50	@
Hexamethylene tetramine	lb.	.72½	@ .75
Lead oleate (bbls.)	lb.	.14	@
Methylene aniline	lb.	.40	@
N. C. C.	lb.	.30	@
No. 999	lb.	.14	@
Paradin	lb.	.36	@
Paraphenylene diamine	lb.	1.60	@ 1.70
Super-sulphur, No. 1	lb.	.50	@ .60
No. 2	lb.	.25	@ .30
Super-X	lb.	.50	@
Super-XX	lb.	.65	@
Thiocarbanilide	lb.	.30	@ .45
Vul-Ko-Cene	lb.	.35	@
XLO	lb.	1.20	@

Accelerators, Inorganic

Lead, dry red	lb.	.09	@ .09¼
white, basic carbonate	lb.	.07¼	@ .08
Lime, flour, superfine	lb.	.02	@ .02½
Litharge, domestic	lb.	*.08¼	@
imported	lb.	*.17	@
Orange, mineral	lb.	.12	@ .14
Magnesia, carbonate, light (bags)	lb.	.05½	@
calcined, light (bbls.)	lb.	.24	@ .25
calcined, ex. light (bbls.)	lb.	.45	@
calcined, md. light (bbls.)	lb.	.16	@
calcined, heavy (bbls.)	lb.	.05½	@ .06

Acids

Acetic 28% (bbls.)	cwt.	2.25	@ 2.50
glacial, 99%	cwt.	8.50	@ 9.50
Cresylic (97% straw color)	gal.	.56	@ .58
(95 dark)	gal.	.51	@ .53
Muriatic, 20 degrees	lb.	.02	@
Nitric, 36 degrees	lb.	.06	@
Sulphuric, 66 degrees	lb.	.01¾	@

Alkalies

Caustic soda	cwt.	3.75	@
Soda ash, 58% (bbls.)	cwt.	2.00	@ 2.25

Colors

BLACK

Bone, powdered	lb.	.05½	@ .07½
Carbon black	lb.	.14	@ .20
pressed	lb.	.16	@ .22
Dipped goods	lb.	1.00	@
Drop	lb.	.07½	@ .16
Hyposulphite of lead	lb.	.20	@ .25
Iron oxide	lb.	.04½	@ .16
Ivory black	lb.	.15	@ .45
Lampblack	lb.	.12	@ .40
Micronex	lb.	.15	@ .21
Rubber maker's black	lb.	.40	@

BLUE

Cobalt	lb.	.21	@ .26
Dipped goods	lb.	1.00	@
Prussian	lb.	.60	@
Rubber maker's blue	lb.	3.50	@
Ultramarine	lb.	.10	@ .35

BROWN

Iron oxide	lb.	.04½	@ .05
Sienna, Italian	lb.	.05½	@ .07
Umber, Turkey	lb.	.05¼	@ .06½
Vandyke	lb.	.04½	@ .06

GREEN

Chrome, light	lb.	.30	@ .32
medium	lb.	.35	@ .36
dark	lb.	.36	@ .45
commercial	lb.	.12	@
tile	lb.	.11	@ .13
Guignet	lb.	1.50	@
Dipped goods	lb.	1.00	@
Oxide of chromium	lb.	.45	@ .57
Rubber maker's green	lb.	3.50	@

RED

Antimony, crimson	lb.	.40	@
crimson, 15/17% free	lb.	.34	@ .42
crimson, R.M.P. No. 3	lb.	.48	@
crimson F	lb.	.40	@
Antimony, golden	lb.	.21	@
golden R.M.P. No. 7	lb.	.20	@
golden, 15/17% free	lb.	.18	@ .21
golden 1	lb.	.30	@
golden 2	lb.	.25	@
7-A	lb	.35	@
vermilion	lb.	.55	@
red sulphuret	lb.	.20	@
Arsenic sulphide, red	lb.	.12½	@ .14
lemon	lb.	.75	@ 1.00
orange	lb.	.75	@ 1.00
Cadmium sulphide	lb.	1.85	@
cold cure	lb.	1.70	@ 1.85
hot cure	lb.	1.40	@ 1.55
Dipped goods red	lb.	1.00	@
purple	lb.	1.00	@

*Nominal.

Chemical Market—*Continued*

New York Quotations

June 26, 1922

Prices subject to change without notice

orange	lb.	1.00	@
Indian	lb.	.08	@ .12
Indian maroon, English	lb.	.12½	@
Iron oxide, reduced grades	lb.	.10	@ .12
pure bright	lb.	.12	@ .14
Maroon oxide	lb.	.08	@ .12
Red oxide, crimson	lb.	.05½	@
English	lb.	.13	@
Spanish	lb.	.03½	@ .04
Oximony	lb.	.16	@
Para toner	lb.	1.25	@ 1.40
Rubber maker's red	lb.	3.50	@
purple	lb.	2.50	@
Spanish natural	lb.	.03½	@ .04½
Toluidine toner	lb.	2.25	@ 2.50
Venetian	lb.	.02½	@ .05½
Vermilion, American	lb.	.25	@ .30
English quicksilver	lb.	.99	@ 1.05

WHITE

Albalith	lb.	.06	@ .06½
Aluminum bronze	lb.	.55	@ .60
Lithopone, domestic (factory)	lb.	.06	@ .06½
Zinc oxide:			
American Horse Head (factory):			
Special	lb.	.08	@ .08½
XX red	lb.	.07½	@ .08
French process, Florence brand (factory):			
White seal	lb.	.11	@ .11¼
Green seal	lb.	.09¾	@ .10¼
Red Seal	lb.	.08¾	@ .09¼
Zinc sulphide	lb.	.45	@
Azo (factory):			
ZZZ (lead free)	lb.	.07¼	@ .08
ZZ (—5%) leaded	lb.	.07½	@ .07¾
(8/10% leaded)	lb.	.07¼	@ .07½

YELLOW

Arsenic, yellow	lb.	1.00	@
Cadmium, sulphide, light	lb.	1.85	@
Chrome, light and med	lb.	.16½	@ .17
Dipped goods	lb.	1.00	@
India rubber	lb.	.87½	@
Ochre, domestic	lb.	.02½	@ .03
imported	lb.	.03¼	@ .03¾
Rubber maker's yellow	lb.	3.50	@

Compounding Ingredients

Aluminum flake (carloads)	ton	22.50	@29.45
hydrate, light	lb.	.17	@ .18
Ammonia carbonate	lb.	.08¾	@ .09¼
Asbestine	ton	20.00	@22.50
Aluminum silicate, C. L.	ton	22.00	@25.00
Barium, carbonate,	ton	60.00	@62.00
dust	ton	100.00	@
Barytes, pure white (carloads)	ton	23.90	@
off color (carloads)	ton	20.00	@
uniform floated (carloads)	ton	23.90	@
Basofor	lb.	.04¾	@
Beta-naphthol	lb.	.25	@
Blanc fixe	lb.	.04	@ .04½
Carrara filler (factory)	ton	18.00	@
Chalk, precipitated, extra light (f.o.b. factory)	lb.	.03½	@ .04¼
heavy (f.o.b. factory)	lb.	.02½	@ .03¼
China, clay, Dixie	ton	22.00	@ 32.00
Blue Ribbon	ton	25.00	@
Blue Ridge	ton	22.00	@ 32.00
Cotton linters clean mill-run	lb.	.05	@
Fossil flour (powdered)	ton	60.00	@
(bolted)	ton	60.00	@
Glue, high grade	lb.	.30	@ .40
medium	lb.	.20	@ .26
low grade	lb.	.15	@ .18
Graphite, flake	lb.	.05	@ .12
amorphous	lb.	.04	@
Infusorial earth (powd.)	ton	60.00	@
(bolted)	ton	65.00	@
Liquid rubber	lb.	.15	@
Mica, powdered	lb.	*.15	@
Pumice stone, powdered	lb.	.03	@ .05
Rotten st., powd. (bbls.)	lb.	.02½	@ .04½
Silica, gold bond	ton	40.00	@50.00
silver bond	ton	30.00	@35.00
Soap bark, cut	lb.	.08½	@ .10
Soapstone, powdered, gray (carloads)	ton	12.00	@
Starch, powd. corn (bags)	cwt.	2.57	@ 2.67
(bbls.)	cwt.	2.85	@ 2.95
Talc, soapstone	ton	22.50	@
Terra blanche	ton	22.50	@25.00
Tripoli flour, air-floated, cream or rose (factory)	ton	25.00	@30.00
white (factory)	ton	27.50	@32.50
Tyre-lith	ton	85.00	@
Whiting, Alba	cwt.		@
commercial	cwt.	1.00	@ 1.10
Danish	ton	22.00	@25.00
English cliffstone	cwt.	1.60	@ 1.75
gilders (bolted)	cwt.	1.15	@ 1.25
K. T.	ton	14.00	@
Paris, white, American	cwt.	1.25	@ 1.35
Perfection	ton	22.00	@24.50
Plymouth	ton	16.00	@18.00
Quaker	ton	13.00	@15.00
Superfine	ton	13.00	@
Wood pulp, XXX (f.o.b. factory)	ton	30.00	@
X (f.o.b. factory)	ton	25.00	@

Mineral Rubber

Gilsonite	ton	70.00	@
Genasco (factory)	ton	50.00	@52.00
Hard hydrocarbon	ton	32.00	@42.00
Soft hydrocarbon	ton	30.00	@35.00
320/340 M. P. hydrocarbon	ton	45.00	@50.00
300/310 M. P. hydrocarbon	ton	40.00	@42.50
Pioneer, M. R., solid (fac.)	ton	42.00	@44.00
M. R. granular	ton	52.00	@54.00
Robertson, M. R., solid (factory)	ton	35.00	@75.00
M. R. granular (factory)	ton	54.50	@72.50
Rubrax (factory)	ton	50.00	@
States "A"	ton	45.00	@
No. 1	ton	35.00	@
Synpro, gran. M. R. (fac.)	ton	54.50	@70.00

Oils

Avoilas compound	lb.	.15	@
Castor, No. 1, U. S. P.	lb.	.12	@
No. 3, U. S. P.	lb.	.11	@
Corn	lb.	.12	@
Cotton	lb.	.12½	@
Glycerine	lb.	.14¾	@ .15
Halowax (500-lb. drums)	lb.	.25	@ .27
Linseed, raw, domestic	lb.	.11	@
Palm lagos	lb.	.07	@ .07¼
Palm, niger	lb.	.08	@
Peanut	lb.	12½	@
Petrolatum, standard	lb.	.05	@ .08
Petrolatum, sticky	lb.	.08	@ .10
Pine, steam distilled	gal.	.85	@ .90
Rapeseed, refined	lb.	11½	@
blown	lb.	.14	@
Rosin	gal.	.45	@ .46
Synpro	gal.	.40	@ .70
Soya bean	lb.	.12	@
Tar	gal.	.25	@ .27

Resins and Pitches

Cumar resin hard	lb.	.09	@ .15
soft	lb.	.09	@ .15
Tar, retort	bbl.	9.50	@10.50
kiln	bbl.	9.50	@
Pitch, Burgundy	lb.	.05	@
coal tar	lb.	.01½	@
hardwood	lb.	.03	@
pine tar	lb.	.03	@
ponto	lb.	.07½	@
Rosin, K (bbl.)	280 lbs.	6.90	@
strained (bbls.)	280 lbs.	6.40	@
Shellac, fine orange	lb.	.*90	@

Solvents

Acetone (98.99% drums [6.62 lbs. per gal.])	lb.	.10½	@ .12
Benzol (90%, drums [7.21 lbs. per gal.])	gal.	.27	@ .32
pure (drums)	gal.	.30	@ .38
Carbon bisulphide (dms. [10.81 lbs. per gal.])	lb.	.06½	@ .07
tetrachloride (drums. [13.28 lbs. per gal.])	lb.	.10	@ .10½
Motor gasoline (steel bbls.)	gal.	.27	@
Naphtha, V. M. & P. (steel bbls.)	gal.	.26	@
solvent (drums extra)	gal.	.23	@
Paracymene (factory)	lb.	.15	@
Toluol, pure (7.21 lbs. per gal.)	gal.	30	@ .35
Turpentine, spirits	gal.	1.19	@
wood	gal.	1.10	@

Substitutes

Black	lb.	.09	@ .14
Brown	lb.	.10	@ .15
White	lb.	.09	@ .16
Brown factice	lb.	.08	@ .14
White factice	lb.	.09	@ .16

Vulcanizing Ingredients

Black hypo	lb.	.25	@ .35
Sulphur chloride (drums)	lb.	.08	@
(jugs)	lb.	.20	@
Sulphur, Bergenport brand, 100% pure (bbls.)	cwt.	2.55	@ 3.15
(bags)	cwt.	2.30	@ 2.90
Sulphur flour (bbls.)	cwt.	2.60	@ 2.90
(bags)	cwt.	2.35	@ 2.65
Superfine 100% pure	cwt.	2.12½	@ 2.65

(See also Colors—Antimony)

Waxes

Wax, beeswax, white, com.	lb.	.42	@ .45
ceresine, white	lb.	.09	@ .12
carnauba	lb.	.16½	@ .17
montan	lb.	.04	@ .05
ozokerite, black	lb.	.18	@
green	lb.	.26	@
paraffine	lb.	.23	@ .25
sweet wax	lb.	.2	@

INDIA RUBBER WORLD
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CAOUTCHOUC
GUTTA-PERCHA
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Reg.United Kingdom.

Vol. 66 JULY 1, 1922 No. 4

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